THE

# PEDAGOGICAL SEMINARY.

Founded and Edited by G. STANLEY HALL.

VOL. III. OCTOBER, 1895. No. 2.

## EDITORIAL.

In the present number of the PEDAGOGICAL SEMINARY Miss S. E. Wiltse, whose books and other writings are known to most kindergartners and primary teachers throughout the country, and who has been more or less actively connected with the work of child study since it began in this country in 1880, marks the termination of her secretaryship of the new child study section during the first year of its existence by writing an account of the external history of the movement in this country down to the close of the Denver meeting last July. This article brings together for the first time a record of what has been begun in various states and cities. It is to be hoped that the author will be able to carry out her purpose of following this up by a more extended internal history, which shall digest the chief results thus far obtained by the increasing number of societies and workers in this country.

Miss Holmes' investigation confirms the important work of Bürgerstein on the "Fatigue of the School Lesson Hours" in most points, but supplements and corrects it in other essential matters.

Prof. Barnes' study of "Children's Views of Punishment" is interesting and valuable for the practical teacher, and also suggests important problems that must throw light on methods of discipline quite apart from the scientific worth of

Printed in Germany

these results. See, especially, his suggestions regarding such study, pp. 236-237, 445, and his note, 302.

Mr. Johnson publishes the results of a year's study of feeble-minded children. For this his extended study of plays and games the previous year (PED. SEM., III, p. 97) had peculiarly fitted him, and Dr. Fernald, head of the Massachusetts State School for the Feeble-minded at Waltham, gave him every aid and encouragement. For his original studies on Memory Span (p. 268), and Motor Ability (p. 274), all the resources of this great school were open to him, and his work here, together with his Miscellaneous Suggestions (p. 284), constitute valuable additions to our knowledge of this class of defectives, and the best modes of training them. The history of the education of idiots is one of the most fascinating and instructive in the entire field of education. The full list of institutions throughout the world and the bibliography make this the best as well as the latest of existing monographs on the subject.

The Art of Little Children is one of the most important and, so far, baffling fields of child study. Ricci's study of 1,250 children's drawings translated (p. 302 *et seq.*) with the study of Professor Barnes, constitutes about all that is good and new that we have on this subject.

Mr. Hancock's study of the relation between strength and flexibility of fingers and hand, although incomplete, opens up a new field of work just as important for the psycho-physics of manual functions as the dimensions of the field of vision and range of movement of eye muscles. Further work in this direction is greatly needed.

Mrs. Gayley's suggestions on teaching the classics to children are both timely and practical.

There are two general ways of advancing education. The first may be sub-divided into what for want of better terms we may roughly call the administrative and the logical, and the second may be called the internal or bio-psychological. The first method works on school laws and organizations, adjustments between grades, constitution of teachers' societies, and on the logical side draws up courses of study, with due correlations, and effects reform by working from without inward.

The second method, assuming education to be solely a branch of applied biology, and impressed with the great distinction between logical and psychological methods, gives prominence to the latter, and would work always and everywhere from within outwards. Its sole standard of educational value is genetic power, which with young children it is at very many points forever irreconcilable with logical fit and consistency of ideas and things among themselves. The latter gives us formal methods, such as, *e. g.*, the familiar sequence: 1. Presentation. 2. Association or *Bearbeitung* or *Vertiefung*. 3. Application and use. But the normal child, as Barnes' well-known study shows, glimpses the first two stages instantly, and first asks of a new thing, what is it for, or its use? Logic has a very high educational value as reason approaches its maturity, and may become a passion as early as the high school, but with young children the prime, if not the sole, question is to know what is the soul ripe and eager for, and to get it in abundantly with the least possible form. Too much reasoning during the period of apercus, quick intuitive perception and fresh youthful impulses may stunt the soul's development. The injury which the old half-metaphysical psychology so actively propagated does both to the work and to the slowly dawning science of education, is incalculable.

As Dr. Stimpfl so well says (see pp. 347-9), it has kept up the idea of an undue separation of mind and body and kept pedagogy too speculative and too apart from anatomy, physiology, hygiene and biology, which are its proper basis; has allowed opinions and wishes too large scope, and obscured the sharp line between verified and unverified hypotheses. Little as we yet know of genetic psycho-physiology, that little is, it may be boldly affirmed without a shadow of doubt or fear, the *punctum saliens* of a new and better organic system of education.

Our predecessors in this favored land gave us good school laws, organization, grading, etc., which we are improving as we are also buildings. Within three years we have taken up the vast problem of revising the curriculum. Back of all these and all other educational problems, however, are the nature and need of the growing child and youth, and the best sign of

the times that the present educational awakening has struck deep root and that the near future will see greater advance than the recent past, year for year, is the fact that American teachers are slowly realizing that the only philosophic and even rational and consistent education is ultimately based solely on a knowledge of the growth of the body, brain and soul of the young of the human species.

The PEDAGOGICAL SEMINARY finds its distinctive character and standpoint in striving to aid in the development of this genetic knowledge of childhood as the conditions of all educational progress that is real or can be permanent.

# A PRELIMINARY SKETCH OF THE HISTORY OF CHILD STUDY IN AMERICA.

By Sara E. Wiltse.

The history of the present epoch-making movement toward the systematic study of children is yet to be written. Its full and adequate story can only be told by one well versed in modern psychology, anthropology, philosophy, the study of morbid mental action, animal instinct, etc. Pending such a history, it has occurred to me that I might, perhaps, fittingly mark the termination of my service as secretary of the new section of the National Educational Association for child study during the first year of its existence, by recording the main facts in the external history of this movement with which I have been actively connected in various capacities from its start in 1880. In such an article I cannot attempt a complete bibliography, and can do almost nothing in the analysis of the many papers that have been written. I am well aware, too, that it is too early to predict or to see the full scope of this movement, which was never so active as at present. Despite the ready aid of a score or two of those most prominent in the work, which I desire hereby to acknowledge at the outset, my paper must necessarily have grave defects of omission, as no one has attempted even the beginnings of such a sketch before. As, however, I hope in the future to revise and greatly enlarge this paper, I shall be grateful for any data, articles or information from any source, not only down to the close of the meeting of the National Educational Association in 1895, with which this paper terminates, but subsequently.

The literature of this subject is already quite comprehensive. Dr. F. Tracy printed over a hundred select titles in his work on the "Psychology of Childhood," a Clark University thesis, in 1893. A fuller list of nearly 250 titles, well classified, is printed in the "Handbook of the Illinois Society for Child Study," May, 1895. A bibliography of "Child Study," is now in preparation at Clark University, which will probably appear later in the Pedagogical Seminary. Dr. G. Stanley Hall, editor of the Pedagogical Seminary,

has attempted to publish in that journal digests or reports of all important literature, the greater part of several numbers of the magazine being devoted to this subject.

While the work of child study did not, perhaps, absolutely originate in this country, the foreign initiative was extremely slight. Darwin and Lazarus had indeed made their studies; Preyer had begun the publication of some of his observations before the years 1879 and 1880, when the work in this country began. In fact, child study is, in a peculiar sense, American. Not only has more been done in this country than in all the world beside, but it seems the instinct of our people to take a fresh, independent look at primal facts of human nature and at growth itself. Moreover, the readiness of not only parents, but even teachers, often so conservative, to apply every practical result in this field, is a happy illustration of some of our best national traits. Courses on child study are now given either in the regular work or in the summer sessions at Clark University, Yale, Harvard, Princeton, Pennsylvania, and elsewhere. Specialists are now studying in this country and Europe, hoping to become professors of "Paidology" when the present transforming effects of this work upon the departments that deal with the human soul shall be a little further advanced. Already, the programme of no educational meeting is complete without at least one paper on this subject, and since the reports of the Committees of Ten and Fifteen have fully opened up the programme question, it is clear that the next step in educational progress must be to shape it to the needs of individual children. Tempting as is the future, however, we must turn from prophecy and address ourselves to history.

*Massachusetts.* The first important study of childhood made in this country was by Professor Henry P. Bowditch, in 1879, based upon thousands of physical measurements of Boston school children between the ages of five and eighteen, and showing that for a brief period, at the age of thirteen or fourteen, American girls are taller and heavier than American boys, and that American children are heavier than those of other nationalities that had been previously measured. This classic investigation, which has been added to in various ways by its author, led to work like that of Dr. William T. Porter, in Missouri, and the minuter work of Dr. F. Boas and his pupils and assistants at Clark University, and has doubtless influenced Dr. Hartwell's work, and that of Professor Bryan and others, but on the whole represents a line less productive as yet in this country, however fundamental its importance, than that of the study of children's minds. Professor Bowditch has lately revised his work by Galton's

method of percentile grades, and has pointed out the relations between growth and disease. Dr. Hartwell's work on children's death rates, and his papers on stammering and anthropometry, are contributions of great value. The work of Dr. Franz Boas, as well as that of Dr. West, is more minute, and establishes important relations between the growth of the face, the body, head, strength of grip, etc.

Previous to 1880 practically no scientific observations of child life had been undertaken in America. There were almost no data for comparing feeble-minded and normal children on entering school, and one searched libraries in vain to find what the average child could either know or do at a given age. It was little suspected how absolutely unreliable and false to fact some of even the best biographies were in the chapters which dealt with the childhood of great men. In 1880 Dr. G. Stanley Hall undertook to determine what the average Boston child at the age of five and six might safely be supposed to know on entering public school. He selected 123 questions, based largely upon the child's relation to nature and society, as the list shows: "Has the child ever seen a cow, pig, sheep, hen, chicken, bee, beehive, frog, worm, butterfly, ant, squirrel, snail, crow, sparrow, hawk, robin, bluebird, apples on trees, peaches, cherries, pears, grapes on vine, willow tree, pine, poplar, elm, chestnut, oak, maple, growing corn, wheat, oats, beans, potatoes, strawberries, blackberries, blueberries, moss? What seed has it planted, if any? Seen a growing rose, buttercup, dandelion, clover? Does the child know the origin of milk, butter? What its stockings are made of? Where meat comes from? Has the child ever seen a hill, river, brook, the woods, a beach, an island, a pond? Does it know its right and left hand? Can it touch elbow, cheek, forehead, ankles, knee, hips, waist, ribs, throat, wrist, knuckles? Can it pick out red, green, blue, yellow? Can it strike a tone correctly, beat time correctly, repeat words correctly? Has it ever seen the moon? Its seeming diameter? Has it ever seen stars, sunrise, sunset, dew, clouds, rainbow, hail? Does it know what season it is? Does it know the numbers three, four, five? Does it know a triangle, a square, a circle? Was the child ever in bathing? Has it been to kindergarten? Can it knit, sew? How can it help at home? What does it love to do or play best? What would it most like to have? What would it like most to be? Name three things right to do. Has the child ever owned a hoop, doll, kite, top, sled, knife, ball, jumping rope? Has it ever been in the country? How many cents has it saved at home? Has it ever seen a spade, plow, hoe, file, axe, shoemaker at work, watchmaker, brick-

layer? Has it ever ridden on a sled, sleigh, horse cars, row-boat, steamboat, cart or wagon, wheelbarrow? Can it tell a little story, say a verse, a maxim or proverb?"

This investigation was carried on through the liberality of Mrs. Quincy A. Shaw of Boston, who detailed four teachers, of which the writer was one, from her kindergartens, to act as special questioners under Dr. Hall's direction. Superintendent Seaver and the teachers of the various schools readily coöperated in this study, the results of which were published in a pamphlet, entitled "The Contents of Children's Minds on Entering School." Out of this grew a large part of the movement for the study of the psychic side of human development. The child's notions of the phenomena of the heavens, and a great majority of the topics studied of late years, were begun in this comprehensive investigation. The little book has had a large circulation in America, and has been translated into several foreign languages. Wide as was the interest this memoir excited, and far-reaching as its influence was, the full scope of the movement it inaugurated was not seen at first, and it was some years before it stimulated other investigations. Mrs. Emily Talbot issued a pamphlet with suggestions for child study at about this time, but has published no data.

In 1881 Dr. Hall printed the first comprehensive syllabus for the study of children, of thirteen pages, which was widely circulated, but produced few scientific results. "The Study of Children's Lies," published in 1882 by Dr. Hall, based upon careful observations collected by the author, has, like "The Contents of Children's Minds," been translated into several languages. The same is the case with his article on "Children's Collections." His "Story of a Sand-pile," *Scribner's*, 1887, was the last before Dr. Hall founded the *American Journal of Psychology*, in which other articles have appeared. Notes on his own children were published in his PEDAGOGICAL SEMINARY. He has also published many other articles easily accessible in the literature, and given addresses on the subject in all parts of the country. During the academic year 1894-5, Dr. Hall has printed and circulated to about 800 inquirers, in all parts of the country who had requested his guidance, a series of fifteen syllabi upon the following subjects: I. Anger. II. Dolls. III. Crying and Laughing. IV. Toys and Playthings. V. Folk Lore Among Children. VI. Early Forms of Vocal Expression. VII. The Early Sense of Self. VIII. Fears in Childhood and Youth. IX. Some Common Traits and Habits. X. Some Common Automatisms, Nerve Signs, etc. XI.

Feeling for Objects of Inanimate Nature. XII. Feeling for Objects of Animate Nature. XIII. Children's Appetites and Foods. XIV. Affection and its Opposite States in Children. XV. Moral and Religious Experiences. To these syllabi over twenty thousand returns have been made, which are now being worked up for publication.

In 1885 a systematic study of children was undertaken in the State Normal School at Worcester, at Dr. Hall's suggestion, the method of which is described by the principal, Mr. E. Harlow Russell, in PED. SEM., II. 1, and is as follows: Half sheets of note paper are furnished for the records, with heading for name and age of observer, and name or initials, age, sex and nationality of the child observed, and the length of time between making the observation and recording it. The observer is advised to conceal his purpose, to keep his note-book out of sight, and to watch the spontaneous activities of the children. It is the gathering of significant and oftentimes apparently insignificant facts that constitutes the task of the students.

Mr. Russell has collected 35,000 of these records, besides many specimens of children's drawings and 150 articles spontaneously manufactured by children. He has already arranged to publish a book on "Child Observations," which will doubtless be of inestimable value to psychologists, teachers and parents. Mr. H. W. Brown and Miss E. M. Haskell of this school have published articles on "Thoughts and Reasonings of Children" and "Imitation in Children," directly based upon the records gathered by their pupils. Mr. Bolton, a Clark University graduate in psychology, one of Mr. Russell's instructors, has done good work. The Russell method has the great advantage of spontaneity. It uses no questions and no syllabi, and greatly reduces the danger of reading into the children's minds what the interrogator seeks. It has also become a new and most stimulating way of teaching psychology, and has been entirely or partially copied in many places. Mr. Russell is one of the most stimulating of all our educational speakers, andhas in late years delivered many lectures upon the aspects andresults of his own work, which have exerted a wide and deep influence. His enthusiasm and example are now one of the most important educational influences in the movement. Mr. Russell's enthusiasm is, however, wisely tempered with conservatism, and this fact has made his influence all the greater with teachers.

In 1888 the writer of this sketch made a study of Hearing in the public schools of Boston. Over a thousand children were tested at Dr. Hall's suggestion, Dr. Clarence Blake, an eminent aurist, directing the practical details. A report of this was given in the *American Journal of Psychology*, and a paper

on "Sound Blindness," based upon these investigations, was read at the National Educational Association held in Nashville, Tenn., in 1889. The writer tested 113 school boys on mental imagery, notes of which were published in the *American Journal of Psychology*. From data gathered from parents, teachers and physicians, a paper on "Adolescence" was presented before the Women's Physiological Union, Boston. The writer has also questioned and made records upon thousands of children for other investigators, which have also been of the greatest service to her in the books of which she is the author, particularly in her "Place of the Story in Early Education, and Other Essays."

About 1890 the whole subject of child study in Massachusetts, not to say the whole country, received a great impulse in connection with the pedagogical department of the newly founded Clark University at Worcester. In his essay, entitled the "Moral and Religious Training of Children," in the *Princeton Review* of 1880, Dr. G. Stanley Hall first drew attention to the intimate relation subsisting between adolescence, education and religion. This subject, which has since proved so fruitful, and was greatly advanced by Dr. William H. Burnham in his most suggestive paper entitled "The Study of Adolescence," was carried still farther by A. H. Daniels in his dissertation entitled "The New Life, a Study of Regeneration," and led to Mr. Leuba's paper on the "Psychology of Conversion." All three of these gentlemen were pupils of Dr. Hall, who suggested these topics, and who strongly believes that there is a greater and still unexplored mine of psychological wisdom in this which is one of his favorite themes.

Other special studies of various phases of childhood made at Clark University are the following, which have been published or are now in press: T. K. Bolton, "Growth of Memory in School Children;" F. Tracy, "The Language of Childhood;" A. H. Yoder, "Studies of the Childhood of Great Men;" G. E. Johnson, "A Study of the Educational Value of One Thousand Classified Plays and Games;" Oscar Chrisman, "The Hearing of Children," "Children's Secret Language;" William H. Bryan, "The Development of Motor Ability;" Dr. William H. Burnham, "A Scheme of Classification for Child Study," "Individual Differences in the Imagination of Children;" Dr. A. F. Chamberlain has a large volume now in press on "The Child in Primitive Culture;" J. A. Hancock, "Preliminary Study of Motor Ability and the Relations of Strength to Flexibility in the Hand."

At Harvard University Professor Royce has collected data and published a number of preliminary reports on Imitation, which promise results of the highest value. On the other hand,

Professor Münsterberg, another Harvard psychologist, is quoted in a late number of *Intelligence* as saying in a Boston address on child study: "All that I have to say out of my deepest heart is simply I do not believe in it."

Miss Calkins, professor at Wellesley, has made a number of important inquiries, in press as I write, concerning various phases of the emotional life of children. Misses F. and M. White of Boston have collected many valuable data. Principal E. H. Russell of the Worcester Normal School has given a course of lectures on child study at the Harvard Summer School and Clark University Summer School of 1895.

In Boston, a child study session of two hours a week has been held in Miss Smith's Fröbel primary normal class. Much time has been spent on the vocabularies of children. Observations have been recorded upon the dominant interests of the children at the time of entering school, for the purpose of developing a school programme upon the basis of the child's mental hunger.

From the above we see that Massachusetts has been the pioneer state in this movement so far as effective work and productivity are concerned. Not only was she first in the field, but she has produced perhaps more valuable results than all the other states combined. So far, however, as organization goes, this state has signally failed. Three times, at least, meetings have been held and modes of organization determined upon; but while prominent educational workers have allowed their names to be used for offices, they have done nothing for the cause. As in so many other things in New England, individual initiative leads, and not organization, as is so often the case in the western and middle states. While many prominent educational men and women in eastern Massachusetts are in hearty sympathy with the movement, it is probable that the same conservative spirit which opposed Horace Mann is now expressed in the hearty applause with which the Boston Schoolmasters' Club are said to have greeted the disbelief in it expressed above by Professor Münsterberg, from his exclusively laboratory standpoint.

*California.* The work in California centres about two names,—Miss Millicent W. Shinn, until recently editor of the *Overland Monthly*, and Professor Earl Barnes of the Leland Stanford University. Miss Shinn's work, like that of Preyer, is largely based on the study of an individual child, her niece. She has in general also followed Preyer's methods, with important innovations and improvements, and the two large pamphlets she has so far published come up to the end of the third year. Her studies are based upon exceedingly copious and careful

notes, and are the best records of an individual child yet published in this country. They cover sensibility to light, sound, early speech, drawing, etc. What Miss Shinn herself says at the close of the second volume of her notes deserves quotation : " The most important generalization that appears to me on completing this analysis of my notes on the development of senses is one contrary to accepted opinion and to my own expectation in beginning the observations, but in accord with my general impression as they proceeded, viz., that the higher senses led from the first in the child's psychological activity. So far from finding an early dominance of taste and smell, displaced later by that of the senses that supply more mental interest, I found a lively attention to sight-impressions very early, slowly overtaken by attention to other sensations in direct rather than in inverse order of their intellectual importance."

Besides these Miss Shinn has published a number of interesting articles on various aspects of child study, and has other significant work well under way. She calls special attention to the fact that the years from three to six, about which least is known, are just those devoted to the kindergarten, and is inclined to reproach its representatives with a sense of satisfaction incompatible with serious investigation.

Miss Shinn has also written a number of minor articles upon the subject, which are very full of interest and suggestion, especially "The Visible World of a Little Child," in the March number of the *University of California Magazine*; "Comments on Babies;" "The First Two Years of a Child" (in press); "Early Home Environment," and has contributed one article to an interesting California book now in print, entitled "Primitive Drawings by Babies."

Professor Barnes has followed to some extent the methods of Dr. Hall, but has worked with more special problems and with larger numbers of children. His work marks important advances, and data for much of it has been collected under his direction by school superintendents, principals and others. One of his most interesting papers is on "The Theological Life of California Children," and brings out clearly the fact that before the age of thirteen most children are inquirers if not sceptics. His paper on "Children's Drawings" suggests important reconstructions of our methods of school drawing, some of which are now being made. Spontaneous drawings are used as a basis of observing the subjective activity of children. Perhaps even more important yet are the conclusions of another of Professor Barnes' papers, showing that the natural child first asks concerning a new object, not what are the details of its form or

its properties, but its uses, or what it is for. This should be radically considered by those disciples of Herbart or Comenius who exhaust observations and object lessons first and make application or use last. A carefully prepared and simple story was told to a thousand children, in another investigation, who drew pictures illustrating it. From these drawings, among other important conclusions, is the following: "The humane instinct in children is far stronger than the destructive instinct." He has also used the story method in the study of "Children's Rights as Seen by Themselves," has written on "Children's Plays," on "Childish Superstitions," "Class Punishments," "Comparison and Inference," "Punishment for Weak Time Sense," "Punishments in School or at Home," "Children's Sense of Time and Their Financial Sense." His organization of teachers' classes under the direction of boards of education has done effective work in San Francisco, San José, Oakland, Stockton, Alameda, Santa Cruz, Santa Rosa, and he is in constant receipt of data from these and other sources. No one has been so successful in getting large masses of data on restricted and carefully defined but important topics, and in securing the active coöperation of school superintendents and school boards. This is at least partly due to the practical nature of his work. Those who desire to know what child study has done that the teachers can make use of in the school room will find nothing in this country so immediately helpful as Professor Barnes' work. The Oakland School Report, especially that for 1892–3, shows that teachers are alive to things in this work that bear even remotely upon the physical and mental welfare of the pupils in the public school, and are aware that it is only by direct study of the children that these conditions can be understood.

During the last four years Professor Barnes has lectured in every city and nearly every village in California. His plan is to outline a subject in a general public lecture, and distribute syllabi. During the next few days the teachers collect papers, work out their conclusions, and send the papers to the superintendent's office, thence to him. He and his students work over this material, meet the teachers again and discuss results. Many of his papers are now out of print. In 1891 he started an experimental kindergarten, adding later a primary school. This opens a field for the special studies printed in the *Pacific Journal of Education* and elsewhere.

One public school in Oakland, with grammar, primary and kindergarten grades, is set aside as an experimental school for the university, and observations there are constantly re-

corded. There are regular conferences between the kindergarten teachers in San Francisco and the pedagogical department of the University of California.

Miss Schallenberger has done exceedingly interesting work in a "Study of Children's Rights as Seen by Themselves." Mrs. Lulu Medbury Chapman, Mrs. Katherine Wolsey Slack, Mrs. Eleanor Gibbons Sharp, Mrs. Walker, Mrs. Condy, Mrs. Frances Bracken Gould and Miss Mirriam B. Levy have done valuable work. Miss Holmes, working under the direction of Professor Frank Angell, has studied the fatigue of a school hour by methods that give different and more reliable results than those of Burgerstein.

Alexander E. Frye, superintendent of schools, San Bernardino, California, has published for the use of his teachers a number of mind charts, by the aid of which the child may be judged as to temperament, constitution and sense defects upon entering kindergarten, and from thence through his school life. Several of Dr. Hall's pupils are doing good work in child study in California. Among these are Principal Yoder of the San Francisco Normal School, Dr. Dresslar at Los Angeles and Professor Bailey of the State University. Mr. Luckey, now of Clark University, published a year ago, from the laboratory of the Leland Stanford University, a most admirable study of color perception in the peripheral retinæ of children, showing it to be far more restricted relatively than in adults.

Altogether, California undoubtedly ranks next to Massachusetts in the amount and value of research in this field. School and university coöperate cordially and effectively in the work, and what has already been accomplished, important as it is, seems likely to be greatly surpassed by what may yet be reasonably expected. A new university, earnest and able young men and women and a young country seem a fit medium for large achievements in the future. Organization has been always directed to practical results, and here California surely leads. The genius of Miss Shinn and Professor Barnes has already accomplished results that are simply marvelous, and of which this little sketch, written at so great a distance, is very inadequate.

*Illinois.* The movement for the study of children in Illinois sprung from a variety of influences. Among these are the sympathetic educational spirit and love of childhood of Col. F. W. Parker, head of the Cook County Normal School, who is a born lover of children; the remarkable two days' session of the Child Study Section of the National Educational Association, held in Chicago in 1893, under the presidency of G. Stanley Hall, and his lectures given the same year in

Springfield and Chicago; and the work of several of his pupils in that city and in the state, of which perhaps Dr. Krohn has been most active; the work of Superintendent O. T. Bright in the organization and the constitution of the State Society for Child Study, incorporated under the laws of the state of Illinois and indorsed by the state superintendent, is a model of what such an organization should be for effective work. The energy and sagacity of the secretary, Mr. C. C. Van Liew, are shown in the published "Transactions and Handbook of the Society," and in the fact that the latter is self-supporting, with 500 members. Dr. Krohn's courage and enthusiasm are manifest in the *Child Study Monthly*, a journal of sixty-four pages, begun in May, 1895. Prominent among the features of organization are the local child study round tables in all parts of the state, chartered by the society and reporting to it, of which half a dozen are now at work; the scheme for visitations of schools and kindergartens and the Advisory Board of professors and other experts, of which Dr. Adolph Meyer is one of the more active members. Professor Bryan has actively coöperated in the work of the society. Among the more important articles in the "Transactions" are "Child Study as Related to Instruction," by C. C. Van Liew; Dr. Holmes, "Measurement of Factory Children;" Dr. Meyers, "Mental Abnormalities;" Dr. H. H. Donalson, "Growth in Relation to Training." The society has also printed many syllabi for the study of children, so that on the whole its publications are invaluable for every worker in the field. All the work of this society bears out the terse sentence of President Parker in his address: "The Illinois Society for Child Study proposes honestly and earnestly to investigate the nature and growth of the child and the best conditions for his growth and education." Professor Krohn, chairman of the Executive Committee, has published a text-book entitled "Practical Lessons in Psychology," based largely upon the study of children, and has measured the Indian and colored children at Hampton Institute.

Prominent among the features of the organized work in this state is the development of relations with physicians and the enlistment of parents in the work. One of the best points about the work is that both the kindergartners and the Herbartians, who in most parts of the country have held aloof from the work, have in Illinois cordially coöperated. Dr. C. A. McMurray, one of the most active and influential Herbartians in the country, has accepted a position as a member of the Executive Committee, and Dr. C. C. Van Liew has also seen that both these causes are

strengthened by coöperation. Miss Elizabeth Harrison, a leader of the kindergarten movement in the west, has broken through the exclusive devotion to Fröbel, to which kindergartners are somewhat prone. Her "Study of Child Nature" and her "Study of Toys" are suggestive contributions. The Chicago Kindergarten College held a convocation in September, 1894, for the study of child nature. At this meeting the influence of nursery appointments, the proper clothing and food and the psychological value of play were among the subjects discussed. Mr. S. H. Clark has published an interesting paper on "Expression in Child Games," and the programmes of the convocation and other meetings for this end are very suggestive.

*New York.* In New York child study has been conducted by individuals at centres which had no relation with each other, so that my account must necessarily be somewhat incoherent. In 1889 a Society for the Study of Child Nature was formed in New York, with Mrs. Harry Hastings as president, and Mr. and Mrs. Felix Adler as its guiding spirits. Children's toys, falsehoods, punishments, literature, language, physical training, manners and habits have been observed and discussed by the members of this society at stated meetings since that date. Their report, 1893, is full of suggestions to mothers' associations. Mrs. Adler's "Hints for the Scientific Observation and Study of Children" followed largely Preyer's topics, the senses and the will. This circle has published little as yet.

The Associate Alumnæ of the Normal College has a Committee on Child Study since 1893, which meets monthly, with Miss Jennie B. Merrill as chairman. Valuable data have been collected and classified on Dr. Hall's syllabi. Miss Merrill has herself made an interesting study of children's street plays, and contributions to the general subject of child study are sometimes printed in the *Normal College Echo* and the *Alumnæ News*.

Dr. Groszmann and Mr. F. Monteser of the Workingman's School obtain a full health record of every new pupil, and study and record his mental and moral traits. Anthropological measurements are taken quarterly by the principal. This work is done in the interests of individual pupils. In the kindergarten normal department, Dr. Hall's syllabi are used. The question, "Have you ever wished to be different? if so, why?" brought forth very interesting illustrations of the children's way of thinking. Dr. Groszmann will later publish his experimental studies of children's drawings. From the School of Pedagogy, its principal, E. R. Shaw, reports that

he has collected over 3,000 illustrations of children's handwriting. One of his pupils has collected data on poor spellers that are much more extensive than Barnes' or Wyckoff's. Dr. Shimer has studied "Mental Traits as Revealed by Physical Signs," and A. T. Smith, in his "Mind Evaluation," has a suggestive and elaborate chart. Mr. Reigart of Columbia College has a course of child study in connection with psychological work. Dr. Chappell reports in the *American Medical Journal*, February, 1889, upon the examination of 2,000 children, in New York city, for nasal defects.

Miss Wyckoff of Brooklyn was the first to introduce a live baby into the psychological class room; and has incidentally made a large number of minor points. In Brooklyn, the Fröbel Society, the Progressive Educational Club, the Mothers' Class of the Pratt Institute, the Reading Circle for the Study of Children's Literature, president, Mrs. F. W. Hooper, and two or three other associations, have done more or less child study. In Vol. VIII, No. 2, of the *Educational Review*, Mr. F. W. Osborn gives an account of a study of the "Ethical Contents of Children's Minds," which is very suggestive. Professor C. A. Thurber of Colgate University has printed "Hints on Child Study" as one document of the New York State Department of Public Instruction, and issued a syllabus bearing the name of C. R. Skinner, State Superintendent. Three thousand compositions are sought on the questions, "What I Want to Do Next Year, and Why," and "What I want to Do When I am a Man or Woman, and Why." New York is thus the only eastern state which has officialized child study. If the first steps in this direction are wisely taken, much may be expected in this great state. We are not yet informed whether Superintendent Jasper, in New York, has felt that the condition of the schools in that city is such as to justify his approval of child study.

Dr. Henry Ling Taylor has published a valuable article in the *Popular Science Monthly*, October, 1892, on "American Childhood from a Medical Standpoint," and Dr. B. Sachs of the New York *Polyclinic* has a paper on "Arrested Cerebral Development," of great interest to psychologists as well as physiologists.

N. A. Calkins has published a pamphlet entitled "The Study of Children," with explanations and suggestions for beginners," also a special course, Philosophy of Education, with blanks for the use of teachers.

*Iowa.* In Iowa, Professor W. G. T. Patrick, of the State University, a pupil of Dr. Hall's, has long been interested

in child study, and at present is publishing studies upon sex differences. Superintendent H. E. Kratz of Sioux City has tested children's senses, their moral sense, etc. In December, 1894, the Iowa Society for Child Study was founded with the approval of the State Superintendent, Henry Sabin, with about sixty members, which has outlined three directions of work: 1st, For Testing Eye and Ear-Mindedness; 2d, For Determining Height and Weight in Children; 3d, For the Study of Temperament Education. Mr. E. H. Kirkpatrick, a former student of Clark University, has studied the development of language in children, and their imagination. He has also published a paper on "Memory" in the *Psychological Review*, Vol. I, No. 6.

*Pennsylvania.* Dr. Lightner Witmer gives a course of lectures, the professed aim of which is to open to the beginner the field of experimental psychology directed to the study of children. Sydney T. Skidmore, A. M., prepared a valuable paper on "An Evolution of Play," which he read before the Educational Club of Philadelphia two years ago. His practical suggestions ought to have borne some fruit by this time. Dr. John Madison Taylor had preceded him with a paper on the "Insane Disorders of Childhood," read before the Pan-American Congress, and another on "Spontaneous Effort in Childhood and Youth." These papers are alive with practical thoughts concerning the environment of the city child and the possible relation of the suppressed play instinct to disease and crime. Samuel D. Risley has examined children both in public and in private schools, to detect symptoms of disordered vision. He finds children sometimes accounted mentally defective who are only afflicted with imperfect eyesight. His opinions and conclusions are of grave importance, and are admirably set forth in the *Educational Review*, Vol III, No. 1. Miss Constance MacKenzie, superintendent of the Philadelphia kindergartens, has studied children's drawings with reference to their tendency to draw large, small or normal, and read a paper on the subject before the Philadelphia Psychological Club. Miss Mary S. Marot is doing valuable work. Miss Boyce, who has studied with Dr. Warner, makes constant application of his methods of discovering fatigue signs and tracing them to the right cause. Too much cannot be said of the value of this knowledge of symptoms, which saves many a child from misapprehension and injury.

*New Jersey.* Professor J. M. Baldwin has embodied the interesting observations he has made upon his own children in a volume entitled "Mental Development in the Child and the Race." This volume is most interesting and valuable

where experiments are recorded, but the speculative part of the book will strike many as over-subtle and its conclusions premature. Dr. Baldwin has a strong sense of the importance of the subject, and, like Professor Royce, assigns to imitation a preponderating rôle in psychic evolution. The *Psychological Review*, of which Dr. Baldwin is one of the editors, has printed valuable contributions. He promises another volume entitled "Interpretations."

Miss Lillie A. Williams of the Trenton Normal School has collected data of the greatest value, exceeded, perhaps, in quantity as well as worth, only by that of Mr. Russell. During the past year Miss Williams has followed Dr. Hall's fifteen syllabi and contributed hundreds of records to each one. Her method has been to dictate each syllabus to her normal classes, talk over the phenomena, and then each member goes with her observation books and blanks to all children and adults within reach and the results are forwarded. Toward the end of the year each pupil attempts some classification of her recorded results as part of the work in the psychology class. Tests and experiments are also made on children in the belief that those who do this work are better teachers.

*Connecticut.* Dr. E. W. Scripture, head of the Yale psycho-physical laboratory, a former pupil of Dr. Hall's, has lectured to teachers on child study in California, Maine and Massachusetts as well as in Connecticut, and has contributed a number of articles, and stimulated work in others. His pupil, J. A. Gilbert, has tested the musical sensitiveness of school children, and has investigated mental and physical development in the studies from the Yale psychological laboratory. Miss Carlyle of the Normal School at Norwich and Miss Hattie E. Hunt of Hartford have collected data.

*Michigan.* A deep and growing interest has been manifest throughout the various parts of Michigan during the past year, since Dr. Hall's lecture, though as yet no very definite and systematic study has been undertaken outside of Saginaw, E. S., Lansing and Cadillac. In these cities Dr. Hall's syllabi have been printed and furnished the teachers of the schools, meetings for study, consultation and comparison of reports have been held, and much good work accomplished. In Saginaw, E. S., a very prosperous mothers' club has been formed. This special movement was given a general impetus at the last meeting of the State Teachers' Association, held at Lansing, November 26, 27 and 28. At this gathering a child study section was added to the general programme by the unanimous vote of all the members of the association. The movement bids fair to permeate and arouse every school in the state the coming year, through the efforts of State Superintendent Pattingill, who is deeply

interested in this line of work. He has already arranged for a "Child Study" section in the *Michigan School Moderator*, and for special contributions, to bring the latest and best fruits of investigation from all parts of the country to place before its thousands of readers.

*Maine.* In Farmington Normal School the playground has been the chief place of observation. Imitation and the self-assertive instinct have received the greatest attention. Some of the high schools gather material for psychology from notes which involve the personal experiences of the pupils or their observations of children.

Mr. Stetson has been making studies for some time, but no special report has yet been made. Physicians and teachers are combining study and effort in this state, which ought to result in marked improvement in the physical conditions, which are so closely interwoven with the mental development of children.

The seventh annual report of the State Board of Health contributes much that every teacher should read, and Dr. Young's work in this suggests that such reports of Boards of Health and School Superintendents should be bound together, and, if need be, forced down the throats of teachers of every grade.

*Indiana.* Professor Bryan, president of the Child Study Section of the National Educational Association for the year 1894-5, of Indiana University, also a pupil of Dr. Hall, has issued "Some Suggestions on the Study of Children," beginning with "Hygiene Observations" and closing with "The Study of Children's Minds." In the university with which he is connected, a class of thirty is studying the literature, methods and results of child study. Seventy-five students have had training in experimental psychology and child study within three years. Professor John A. Bergström, who was for three years a student of Dr. Hall's, and Dr. A. J. Kinneman, are engaged in child study.

Mr. A. H. Yoder has several thousand papers on children's vocabularies, nearly a hundred on what I used to think, and many others of equal value are yet unpublished.

Mr. E. E. Starbuck has been engaged upon a study of conversion and the psychology of religion; he will pursue these lines of investigation at Clark University the coming year.

*Minnesota.* In 1892 John H. James, M. D., Mankato, Minn., published a valuable paper entitled "Suggestions to Teachers Regarding Visual Defects of School Children." Mr. M. V. O'Shea of the State Normal School, Mankato, Minn., has given his teachers a handbook of "Suggestions

to Pupil Teachers for the Observation and Study of Children," which is of great value from the hygienic side.

Mr. H. S. Baker, of St. Paul, has been making a study of children's fears, following President Hall's syllabus, and has collected valuable data on the subject, his method being somewhat like that of Mr. Barnes in getting the ideas of the children through compositions on given topics. He has also made equally valuable studies of fatigue of school children, and has collected comprehensive data on other of Dr. Hall's syllabi.

*Missouri.* In 1881 Superintendent Greenwood of Kansas City repeated Dr. Hall's Boston questions, and found the children of that city somewhat less ignorant about natural objects than those of Boston. More interesting yet was his conclusion showing that colored children were more precocious than white children of the same age. In the Annual Report of the Kansas City Public School for 1887-8, there is a "Study of Children's Vocabularies," an article on the "Moral Phase of Playing Keeps," and a programme of work in second and third grades bearing upon the "Manners and Morals of the Pupil." Most refreshing pages in a public school report!

In the "Transactions of the Academy of Science," in St. Louis, Dr. W. T. Porter has published two important studies. The first, entitled "The Physical Basis of Precocity and Dullness," shows that precocious children are heavier, and dull children lighter, than the mean child of the same age; the second, entitled "The Relations Between the Growth of Children and Their Deviation from the Physical Type of their Sex and Age."

*Wisconsin.* Professor Jastrow of the State University, a pupil of Dr. Hall, has shown that the age of six is very important for the blind. Those who become blind before that age grow blind-minded, those who become blind after that age are likely to remain eye-minded for life.

In 1881 G. W. Peckham published a report of great importance on the "Growth of Milwaukee Children." The summary of his results, showing a comparison between the physical condition of Boston and Milwaukee children, affords the Boston teacher something to think about in relation to courses of study.

*South Carolina.* In July, 1894, an association was formed in South Carolina for the study of children. This association has been making observations and records concerning heredity and environment, health and disease, normals, exceptionals and defectives, goodness and badness, work and play, and many other important subjects suggested by its Executive Committee, of which Dr. Thomas P. Bailey, late of Clark Uni-

versity, was the chairman. Dr. Bailey's syllabus is one of the best and most comprehensive that has yet been published. Mrs. Schleppergrell-Keppler has been a very active worker, especially in the kindergarten grades.

*Colorado.* Mr. J. A. Hancock, superintendent of schools in Durango, has studied children's drawings to discover what they best like to draw. Eighty-seven per cent. of 300 children observed, asked to draw animals. Mr. Hancock thinks it evident that the movement of animals attracts them first, their use becoming of interest to the child somewhat later.

*Ohio.* Dr. Aikins, a Clark University man, is making investigations in the line of child study, and has directed the studies of his pupils in investigating the moral ideas of children.

Dr. Dowling has made an exhaustive study of the eyesight of children in both public and private schools, having examined more than 1,000 children for this purpose.

*Rhode Island.* In the training school for teachers, Pawtucket, R. I., of which Miss Mary L. P. Shattuck is principal, initial steps in the observation of pupils in all grades have been begun. The same work is done in the kindergarten training school in Providence.

*Nebraska.* Professor H. K. Wolfe of the State University published, in 1890, an investigation on the "Color Vocabulary of Children," based upon 23,000 returns, which shows, besides many other things, how very accidental is the association of names with the color perception, and how often the color blind learn to associate names with well saturated typical colors. His tabulation of errors suggests a new standard here. Professor Wolfe has for the last four or five years made other records and observations, and has an unusual accumulation of results which remain as yet unpublished. As the best illustration of a unique collegiate method of bringing out the educational value of child study work and methods, I cannot do better than to insert the following extract from a letter by Prof. Wolfe of the University of Nebraska:

> At the University of Nebraska two courses in child study are given each year. The work is systematic, and, even in the introductory course, is planned for students of senior rank. The first course is given only during the second semester. The class meets for informal lecture twice a week. About half the members have had three half years' work in physiological, experimental and comparative psychology. Other members may have had but one semester's work in psychology. These latter must be especially interested in this kind of work, and must carry their second semester's work in psychology along with child study. Last year this introductory class numbered twenty-five members. The students average fully three hours' preparation for each lecture. Rather full notes of points, facts, etc., with page references for reading, are furnished in advance of the lecture. These notes

(mimeographed—not dictated) average perhaps 300 words per lesson. Of course the work is based on the previous study of psychology. It is a study of the *facts* of individual development from conception to the age of six years, supplemented by the consideration of a few monographs on later phases of growth and life. No original work is attempted in this introductory course, but each student is required to spend considerable time in the primary schools of the city, and to report in detail on the physical characteristics of at least ten children. For this report blank forms containing about thirty points are furnished. Students are also required to test many of the facts stated, especially in regard to development and training of the senses in younger children, and to criticise methods observed in the city schools as well as to suggest methods for specific purposes. No attempt is made to construct a body of rules for the wholesale reformation of prevalent methods. I think the general effect is to *increase* the individuality of the teacher.

It is interesting to know that some young men and several young women have taken this course without any intention of becoming teachers. Its culture value has been recognized, but far more significant is the fact that young men and young women in a co-educational institution are able to perceive the importance of such study for all parents.

The second course runs through the whole year. The class meets once a week, for two hours. Ten students who had completed the work of the introductory course were enrolled last year. Some of these students have had three years' work in child study, and are among the best teachers in the Lincoln schools. The purpose of this course is twofold. First, each student is expected to obtain during the year some rather definite information concerning the entire literature of child study. Titles are classified and furnished the students by the instructor. All works in English are examined by each student, and notes regarding scope and importance are made. The more important works are read and digests are made. Contents of the best works in other languages are summarized by the instructor and noted by the student. At the close of the year each student should know something of what has been done in child study, and should have a descriptive bibliography, made by himself, that will enable him to continue the work without an instructor. The making of such a bibliography is worth the time spent, and its possession is, at least, equally valuable.

In the second place, each student selects two topics for special investigation and to report upon. The first one requires very little experimental work. It is chiefly the careful study of some important monograph or group of articles on one subject, with such supplementary work from her own school-room, or from our laboratory, as the student has time to perform. These reports each occupy from one to two meetings. The second topic of the year is assigned for original work. While the gain to science has not been as great as we hope it will be in future years, the advantage to the student cannot be overestimated. The most successful investigations of last year are now being put in form. They include a study of the elements of stories that especially interest children: the color sense of children from four to eight years old; spelling by eye and ear methods of study; the drawing of straight lines by children before they have learned to write; mirror writing. I must add, however, that all our results are much more valuable to us who do the work than to science. The first and last object of our course is to help the teacher who takes the work by enabling her better

to adjust herself to the requirements of the child's world. An experience of five years with child study, in a co-educational state university, convinces me that such work is not only possible, but will yield better results both for culture and for "practical" life than almost any other one subject. I am also persuaded that, to be successful, this work must be both systematic and philosophical.

Mr. Luckey, who assumes the chair of pedagogy in that university in October, has studied laughing and crying with the phonograph at Clark University, and will no doubt help the work along in this state.

In Minnesota Mr. M. V. O'Shea's "Suggestions for the Observation and Study of Children," and J. H. James' "Suggestions Regarding Visual Defects of School Children," remain up to date the only contributions to the work in this state known to the writer.

In Maryland the same is true of J. Johnson's "Rudimentary Society Among Boys," which is perhaps the best of all studies yet published of the social instincts of children.

In Ontario, Canada, the child study movement may be said to have received its first definite impulse from a series of addresses delivered last year by Dr. G. Stanley Hall, at the annual meeting of the Ontario Educational Association, held in Toronto. In April and May, 1892, Dr. A. F. Chamberlain of Clark University superintended the extensive measurements carried on in the public schools of the city of Toronto, with the approval of the authorities and the coöperation of the teachers, under the auspices of the sub-department of Physical Anthropology (World's Columbian Exposition), Chicago, the chief of which was Dr. Franz Boas, then docent in anthropology at Clark University. The results will appear in the report of Dr. Boas, to be published at a future date. This year the Dominion and Ontario Associations held a joint meeting at the same place. Papers on child study were read by Dr. Tracy of the University of Toronto, and S. B. Sinclair, M. A., of Ottawa Normal School. The discussions developed the fact that there was an increasing interest in the subject and that considerable work had been done. This interest took definite shape in the formation of a child study section as an organic part of the Ontario Association. Dr. Tracy was appointed chairman, and Miss MacIntyre, kindergarten supervisor of Toronto Normal School, secretary. The committee has mapped out a course of study for the ensuing year.

Among the earliest students of child life we find the members of the Women's Anthropological Society of Washington. In 1886 Mrs. Clara Bliss Hinds read a paper before this society on "Child Growth," to which were appended twenty-

three questions for mothers to answer. The same student issued a set of questions in 1891, for the study of Afro-American child life. Mrs. Annie Howes Barus has contributed several papers to the society, based upon the observation of her own children, one, "The History of a Child's Passion (for Bottles)," being of uncommon interest. The Association of the Collegiate Alumnæ has undertaken the study of children, sending out a circular of directions with four schedules. The first schedule directs the student in observations of babies under six months old; the second is intended for observations of the child under a year old. There are at the present time four schedules, the last involving studies of memory, imagination and speech. This association recommends students to prepare themselves by a careful study of Preyer's "Mind of the Child," Shinn's "Notes on the Development of a Child," and Tracy's "Psychology of Childhood." In 1891 Mrs. Annie Howes Barus read a paper on "The Study of the Development of Children" before the association, which contains acute observations upon early infant life. Miss Shinn has printed several of her best papers in connection with her work as a member of the Collegiate Alumnæ. It seems to the writer that this is the place where the best work should be done. The sympathy and the tact of educated women ought to produce the best possible results. How much serious work they can really do remains yet to be seen. It is possible that this association made an initial error in placing this department under the direction of foreign experts, when home talent was to be had for the asking, that was quite as good and better from proximity and readiness to work. Besides all the above work, much of which is, of course, only beginnings, and very rudimentary at that, there are many tentatives and syllabi. It is already abundantly shown that any teacher or parent of common education and intelligence can record facts of which the psychologist can make great use, just as any traveler or missionary can record observations on the savage life for the anthropologist, or hunters, trappers and light-house keepers can fill out blanks on migratory and other instincts of animals for the comparative psychologist. It must not be forgotten that although it is necessary to look for scientific results, to which alone we have had an eye in the above sketch, the greatest value of this work consists in putting the teacher into rapport with the individual pupil. To change from the machine method of handling masses of children to this standpoint, gives new life to teaching. It is especially the women's way in the school-room. For every incident or fact, however small, that has the least scientific

value, it is probable that scores, and perhaps hundreds, of pupils and teachers are benefited by coming into a new relation. Those who send out syllabi to large numbers of people always hear from many who are benefited by them who do not even try to make a record. The more we know about child study, the truer becomes the well worn saying that it is first for the teacher, second for the pupil, and last and incidentally for science. It must not be forgotten that to secure the first two benefits in full measure, the last must chiefly be held in view. We have yet to hear of any intelligent man or woman, who has given the subject careful attention, who is not heartily in favor of it.

At the National Educational Association, which met in Denver in July, the Child Study Department listened to reports of the movement in various states. Papers on the different phases of work were read by the Dr. Bryan, president, Mr. G. W. T. Patrick, Mr. Krohn, Mr. Kratz, Dr. Shaw, and others. Mr. O'Shea gave an address on "The Method and Scope of Child Study for Teachers," and Mr. Barnes spoke on "Punishment as Seen by Children," showing that 42% of 4,000 children consider their punishment just, 12% think the punishment does them good in some unknown way, 7% accept what comes from the authorities without question, 4% claim to be innocent, 10% object to their trial, and only 11% are willing to say that they are right and those who punish them are wrong. Mr. Brown of the California University contributed something upon "Children's Interests in Reading," which had a most practical bearing. Mr. Van Liew reported upon his experiments in giving rhymes, myths and stories to children as a preparation for reading the same. Mr. Hancock presented some of the results of his Motor Studies, which bear directly upon mistakes in the kindergarten, and in teaching writing, too, early in primary school, and Drs. Hartwell and Lincoln spoke upon School Hygiene, which bears so directly upon mental conditions of pupils.

A series of brief and brilliant addresses was given on "What Can the Public School Teacher Profitably Undertake in Child Study?" All meetings of the department were well attended, and an astonishing amount of work reported as being done throughout the country.

The most common objections to child study are made by older and more conservative teachers, and by teachers of philosophy of the old type. It is sometimes said the study of children makes them self-conscious. Professor Munsterberg says he loves his children, but congratulates himself that he never did and never will study them. But child study is not vivisection, and if any of its cruder methods have in any

case tended to make a child self-conscious, such methods are invalidated. It is the spontaneity of the children that is wanted, and the natural acts, words and thoughts of the child that are of real value. Much of the observation has no more tendency to spoil children in this way than Mr. Z. Clark's attempt to note down the morning song of the robin would tend to make that bird affected. A teacher with tact will even question and cross-examine children, not only with no danger of making them affected or introspective, but with the very greatest benefit to the child's own psychic activity. For instance, by exploring childish fears, the act of telling them by the child tends to somewhat diminish them, as confession is good for the conscience, while the sympathetic questioner shows the child that its fears are not peculiar to itself, and is often able to remove a definite cause of fear as well as to adopt lines of treatment for the gradual reduction of others. To lessen these secret fears, which in some cases that I have known make life miserable and greatly limit the sphere of activity, is sometimes one of the greatest services that one person can perform for another. If teaching is to remove ignorance, superstition and error, its highest joy and use are incalculably increased by knowledge of the child soul, such as only special study can give. To those who think in dollars and cents, I will add that this knowledge greatly enhances the pecuniary value of the service which teachers render in developing soul power.

To those who say child study is a fad, the answer is no less ready and overwhelming. There are many crudities of method and trivialities in the way of results. Many people are attempting kinds of work in its various fields for which they are totally incompetent. Only those trained, as I have said, in the study of insanity, anthropology, philosophy and laboratory psychology, etc., and who can wield all the resources of these great departments, are fully trained for this work, but every one can help not only himself, but the expert. The dimensions and force of this movement are shown by the fact that, like other great culture movements, it has overflowed the traditional channels of academic work, and has become a popular movement, which, like the Reformation that it consummates, has as its watchword *Individuality*. Few have yet seen the vast scope of the movement. One of its best features is that it is a new point of contact between the people and scholars, and is bringing together the university and kindergarten as never before in their history. Every great movement floats many faddists and dilettantes.

The professors who look askance upon child study are of two kinds: those whose work has shut them within the four

walls of a psycho-physical laboratory, and the teachers of the old fashioned philosophy. The former are certain to favor the movement, as many of them are doing as soon as they see the full scope of its meaning; the latter will go very slowly. Those with ethical bias are beginning to study the social instinct of children; those who teach Kant, and still more those who, like many normal school philosophers, live in a realm of dry definitions, will probably be the very last to be reconciled to this movement.

Finally, as a kindergartner and as a woman, I must say two last words.

As a kindergartner I feel keenly the criticisms of our methods suggested by Mr. Hancock's scientific objections against the finer work, by Van Liew's criticism of our philosophy, and by Miss Shinn's suggestion that we say of child study as those who burned the Alexandrian Library said of its agreement with the Koran: "If child study agrees with Fröbel, it is of no use, so burn it; if it does not, it deserves only to be burned." I think there is less truth in Miss Shinn's statement that it is just the kindergarten years from three to six of which we know least. For one I am quite convinced that the time has come when we must modify some of our most established practices, and that if Fröbel came to Boston, he would be found among the foremost students of childhood, and would coöperate eagerly in such revision of his work as child study suggests, and those who love his spirit more than his letter had long ago begun.

As a woman I desire to see the vast affectional resources of the woman's heart brought out in every school-room. What most children need in their earlier years even more than knowledge, is love, and to establish this individual bond which the man-made machine method had almost forgotten, the best and only method is more individual knowledge of each child. The study of a child, even mentally or morally defective, throws a charm of interest about it and vastly increases the chances of doing that child good. To know children is to love them, and not only the American school with its growing proportion of female teachers, but the American home with its decreasing children and lessening home ties, and American girldom generally, with its fading ideals of domesticity, can only be affected favorably by anything that tends to draw it toward the highest object of human affection, the object most worthy of reverence, love and sacrifice,—the growing child.

STUDIES FROM THE PSYCHOLOGICAL LABORATORY OF LELAND STANFORD, JUNIOR, UNIVERSITY.

# The Fatigue of a School Hour.

By Marion E. Holmes.

The following work was undertaken to supplement the researches of Bürgerstein[1] on the fatigue of school children incurred during an ordinary recitation hour.

More especially the author has endeavored to amend what seemed to her certain faults in the choice of material for operation, in supplying tests for classifying, and in evaluating errors in their otherwise valuable researches. As is well known, Bürgerstein used examples in multiplication, as well as in addition, for testing the fatigue of a school hour, but it is hard to see that the examples in multiplication added any essential elements to the tests offered by addition, and they have, therefore, been left out of the present work as an unnecessary complication.

In evaluating errors Bürgerstein counted each wrong figure of a series resulting from a single error of computation as one error: thus, in adding 6,893 to 3,108, a pupil put down 9,991 instead of 10,001; this Bürgerstein counted as three errors, though there was evidently but one error of computation. In regard to this, Bürgerstein simply says[2] that counting a serial error as a single error gives no regular variation in the results, while "a careful study of the work leads to the assumption that counting each wrong figure as a real error comes nearer the truth, as far as the direction of the curve of work is concerned, than counting serial errors as one error." Furthermore,[3] he has not taken into account the

[1]Die Arbeits-Curve einer Schulstunde. Vortrag von Dr. Leo Bürgerstein. Sonder-Abdruck aus "Zeitschrift für Schulgesundheitspflege," 1891.

See also L. Höpfner. Über die geistige Ermüdung von Schulkindern. Zeitschrift. f. Psy. und Phys., VI, pp. 191-229.

[2]Bürgerstein, Op. cit., p. 9.

[3]*Ibid.*

loss of interest as the work went on, but he has accounted for the increase in error by fatigue alone.

In our experiment, the material put into the children's hands consisted, like Bürgerstein's, of four sheets of figures, sixteen rows of addition extending across the paper to each sheet, and twenty additions to each row. To avoid having a single error affect several figures of the answer, no row contains two consecutive additions whose sum is greater than 9; hence an error cannot affect more than two figures in the answer. No combination, in adding, is repeated in any row, no combination contains zero, and none having both figures alike is used. In this way the sheets presented about equal difficulties in addition, yet differed in detail.

This arrangement, however, would give "one to carry" at every alternate addition, making a rhythm in the work which it was thought best to avoid. Therefore, three combinations whose sum is less than 9 are introduced into each row, at intervals of five or six figures. Each row then contains eleven combinations whose sum is less than 9, and nine whose sum is greater than 9. The final addition of each row is greater than 9, so each answer contains twenty-one figures.

The second sheet is obtained from the first by the following change in each row: The positions of all combinations less than 9 are unchanged, while each combination greater than 9 is moved to the right, into the next place that contains a combination greater than 9, the one on the extreme right being brought to the vacant position on the extreme left. The third sheet is obtained by writing the rows of the first sheet in reverse order; the fourth, by a similar change in the third.

The material was printed on sheets of manilla paper, 30 x 38 cm., with English type, which is about $2\frac{1}{2}$ mm. high, a size of figure common in the school text-books. The rows of figures covered the left half of the sheet, the right half being left blank for copying the answers. This copying of the answers was introduced to serve in a measure as a means of discriminating between errors of computation and errors of transcribing.

The first sheets having been distributed, the children were instructed to add the rows, and when a row was finished, to copy the answer in the space to the right, writing, as they had written their answers in the first place, from right to left. The papers of any who did not exactly obey instructions were thrown out. At the command to start they began work together, and at the end of nine minutes they were stopped and the papers collected. After a rest of four minutes they were started on the second sheet, and the same process was con-

tinued for four sheets. This made forty-eight minutes from the beginning to the end of the work, the other twelve minutes of the hour being used in the beginning in giving instructions. The children, with the exception of part of the seventh grade boys, worked with apparently great interest till the end. The papers of any who did not work steadily were discarded.

As a second means of discriminating between the kinds of fatigue involved, the pupils were made to bisect lines of 6, 8 and 10 cm. in length, ruled at the top of the first sheet and the bottom of the last sheet, at the beginning and at the end of the exercise. This would separate off roughly perceptual and motor processes from the associative processes of computation.

The experiment took place in the Grant school of San José, and included all grades from the third to the eighth. All the exercises took place between the hours of 9 and 10 A. M., the time usually devoted to arithmetical work in this school.

TABLE I.

| Grade. | No. in Class. | Av. Age. | Oldest. | Youngest. | Date of Ex. |
|---|---|---|---|---|---|
| | | Yrs. Mos. | Yrs. Mos. | Yrs. Mos. | |
| Boys | 4 | 14 9 | 15 8 | 13 11 | |
| 8th. Girls | 11 | 16 2 | 17 11 | 13 6 | June 14 |
| Both | 15 | 15 8 | 17 11 | 13 6 | |
| Boys | 15 | 15 5 | 17 2 | 13 1 | |
| 7th. Girls | 9 | 14 6 | 15 6 | 13 8 | June 5 |
| Both | 24 | 15 0 | 17 2 | 13 1 | |
| Boys | 13 | 14 3 | 17 4 | 11 10 | |
| 6th. Girls | 15 | 13 9 | 15 10 | 12 5 | June 6 |
| Both | 28 | 14 0 | 17 4 | 11 10 | |
| Boys | 18 | 13 3 | 15 11 | 10 11 | |
| 5th. Girls | 17 | 13 5 | 15 6 | 10 11 | June 11 |
| Both | 35 | 13 4 | 15 11 | 10 11 | |
| Boys | 11 | 12 1 | 15 9 | 9 10 | |
| 4th. Girls | 15 | 11 7 | 15 10 | 8 1 | June 12 |
| Both | 26 | 11 10 | 15 10 | 8 1 | |
| Boys | 9 | 10 10 | 12 10 | 9 4 | |
| 3rd. Girls | 13 | 10 6½ | 12 1 | 9 8 | June 13 |
| Both | 22 | 10 8 | 12 1 | 9 4 | |

Table I shows the number in each class, the age of the pupils, and the date of the experiment. Table II shows the number of errors and corrections made in each of the four

TABLE II.

*Total Number of Errors, Corrections and Figures.*

| Period. | | Errors. | | | Corrections. | | | Figures. | |
|---|---|---|---|---|---|---|---|---|---|
| | | Adding. | Copying. | Both. | Adding. | Copying. | Both. | Adding. | Copying. |
| Boys | I | 157 | 53 | 210 | 133 | 52 | 185 | 10,362 | 10,389 |
| | II | 191 | 71 | 262 | 237 | 77 | 314 | 12,151 | 12,060 |
| | III | 344 | 127 | 471 | 333 | 103 | 436 | 13,161 | 13,096 |
| | IV | 423 | 106 | 529 | 359 | 89 | 448 | 13,564 | 13,617 |
| Girls | I | 189 | 54 | 243 | 98 | 54 | 152 | 13,351 | 13,280 |
| | II | 239 | 44 | 283 | 198 | 66 | 264 | 15,590 | 15,713 |
| | III | 299 | 81 | 380 | 317 | 79 | 396 | 16,648 | 16,712 |
| | IV | 389 | 76 | 465 | 377 | 89 | 466 | 17,421 | 17,641 |
| Boys and Girls | I | 346 | 107 | 453 | 231 | 106 | 337 | 23,713 | 23,669 |
| | II | 430 | 115 | 545 | 435 | 143 | 578 | 27,741 | 27,773 |
| | III | 643 | 208 | 851 | 652 | 182 | 832 | 29,809 | 29,808 |
| | IV | 812 | 182 | 994 | 736 | 178 | 914 | 30,985 | 31,258 |

periods, as well as the number of figures added and copied. Each row of additions contains only twenty sums, but twenty-one figures in the answer, hence there are more figures for copying than for adding; this is, however, counterbalanced by the fact that a row may be wholly or partially added, but not copied, when the command to halt comes. So, though the number of figures added and the number copied may be widely different in any one class, in the totals they differ little. The totals show the general law to be an increase in each succeeding period in the work accomplished, and also an increase in the errors and corrections, both in adding and copying. This law holds true for both boys and girls.

Table III shows the amount of increase of errors, corrections and figures from one period to another (negative signs indicate a decrease). This table shows a general parallelism of errors and corrections for both addition and copying. In each case the greatest increase is from the second to the third period, but while the addition errors increase throughout, the absolute number of errors and corrections in copying is less in the fourth period than in the third—an effect which may be due to practice, as the copying of a row of figures from right to left was for most, if not all the pupils, a new process.

Here, as in Bürgerstein's results, the curve of increase in error falls somewhat in the last period. In the last period the boys decrease while the girls increase in corrections in copying. This probably indicates a greater haste and carelessness on the part of the boys, who did not stop to make corrections. This carelessness is also shown, perhaps, in

TABLE III.

*Increase from Period to Period.*

| Grade. | Period. | Errors. | | | Corrections. | | | Figures. | |
|---|---|---|---|---|---|---|---|---|---|
| | | Adding. | Copying. | Both. | Adding. | Copying. | Both. | Adding. | Copying. |
| 8th Boys | I-II | 5 | —7 | —2 | 6 | —1 | 5 | 99 | 58 |
| | II-III | 12 | 5 | 17 | 0 | 8 | 8 | 21 | 27 |
| | III-IV | 0 | 0 | 0 | 11 | —7 | 4 | —20 | —1 |
| 8th Girls | I-II | 6 | 2 | 8 | 15 | 8 | 23 | 262 | 276 |
| | II-III | 10 | —1 | 9 | 10 | —1 | 9 | 172 | 164 |
| | III-IV | 6 | 0 | 6 | 9 | —2 | 7 | 96 | 105 |
| 7th Boys | I-II | —5 | —4 | —9 | 15 | 17 | 32 | 389 | 270 |
| | II-III | 30 | 16 | 46 | 22 | —3 | 19 | 222 | 249 |
| | III-IV | 7 | 5 | 12 | 25 | —3 | 22 | 188 | 202 |
| 7th Girls | I-II | 22 | —4 | 18 | 3 | 0 | 3 | 326 | 393 |
| | II-III | 13 | 12 | 25 | 14 | 5 | 19 | 268 | 223 |
| | III-IV | 19 | —5 | 14 | 10 | —3 | 7 | 82 | 134 |
| 6th Boys | I-II | 28 | 9 | 37 | 30 | 3 | 33 | 596 | 657 |
| | II-III | 70 | 7 | 77 | 28 | 2 | 30 | 228 | 283 |
| | III-IV | 13 | 1 | 14 | —3 | 4 | 1 | 170 | 220 |
| 6th Girls | I-II | 11 | 8 | 19 | 19 | 5 | 24 | 962 | 898 |
| | II-III | 21 | 6 | 27 | 37 | 1 | 38 | 178 | 192 |
| | III-IV | 25 | 9 | 34 | —23 | 1 | —22 | 244 | 239 |
| 5th Boys | I-II | —4 | 6 | 2 | 20 | 2 | 22 | 477 | 388 |
| | II-III | 5 | 11 | 16 | 24 | 3 | 27 | 343 | 336 |
| | III-IV | 40 | —14 | 26 | —5 | 1 | —4 | —37 | 27 |
| 5th Girls | I-II | 12 | —5 | 7 | 31 | —5 | 26 | 360 | 480 |
| | II-III | —4 | 8 | 4 | 26 | 4 | 30 | 264 | 238 |
| | III-IV | 22 | 1 | 23 | 24 | 6 | 30 | 211 | 282 |
| 4th Boys | I-II | 6 | 1 | 7 | 10 | 5 | 15 | 100 | 105 |
| | II-III | 13 | 4 | 17 | 25 | 6 | 31 | 62 | 64 |
| | III-IV | 12 | 2 | 14 | —5 | 1 | —4 | 4 | —19 |
| 4th Girls | I-II | 0 | —2 | —2 | 11 | 0 | 11 | 198 | 239 |
| | II-III | 10 | 0 | 10 | 8 | 4 | 12 | 196 | 174 |
| | III-IV | 27 | 0 | 27 | 18 | 8 | 26 | 52 | 109 |
| 3rd Boys | I-II | 4 | 13 | 17 | 8 | 4 | 12 | 128 | 193 |
| | II-III | 23 | 13 | 36 | 12 | 5 | 17 | 134 | 77 |
| | III-IV | 7 | —15 | —8 | 3 | —10 | —7 | 98 | 92 |
| 3rd Girls | I-II | —1 | —9 | —10 | 21 | 4 | 25 | 131 | 147 |
| | II-III | 10 | 12 | 22 | 24 | 0 | 24 | —20 | 8 |
| | III-IV | —9 | —10 | —19 | 2 | 0 | 2 | 88 | 60 |
| All Boys | I-II | 34 | 18 | 52 | 104 | 25 | 129 | 1789 | 1671 |
| | II-III | 153 | 56 | 209 | 96 | 26 | 122 | 1010 | 1036 |
| | III-IV | 79 | —21 | 58 | 26 | —14 | 12 | 403 | 521 |
| All Girls | I-II | 50 | —10 | 40 | 100 | 12 | 112 | 2239 | 2433 |
| | II-III | 60 | 37 | 97 | 119 | 13 | 132 | 1058 | 999 |
| | III-IV | 90 | —5 | 85 | 60 | 10 | 70 | 773 | 929 |
| Total | I-II | 84 | 8 | 92 | 204 | 37 | 241 | 4028 | 4104 |
| | II-III | 213 | 93 | 306 | 215 | 39 | 254 | 2068 | 2035 |
| | III-IV | 169 | —26 | 143 | 86 | —4 | 82 | 1176 | 1459 |

that the increase in addition errors is larger from III to IV than from I to II; in addition corrections it is smaller. The girls show the same thing here, though to a smaller extent than the boys. Table II also shows that the boys lose interest more rapidly than the girls, for the girls begin with a larger number of errors in adding and copying and finish with fewer. The relative number of corrections and errors also leads one to believe that the girls maintain more interest, and the table for bisecting lines (see page 224) shows less fatigue on the part of the boys. It is, however, hardly fair to draw conclusions from those tables relative to sex; differences of sex which hold for children of nine years perhaps would not for children of sixteen. The results of the separate grades are too irregular to be of much value here. They are far more regular for errors and corrections in adding than in copying. Probably this is mainly due to the fact that such errors and corrections are more frequent.

The absolute amount of work accomplished increases in each succeeding period, with the largest increase from I to II, and the smallest from III to IV. The figures of increase form a decreasing series, which would, probably, if the work were continued, become negative. There are three of the classes where it has already reached the zero point, viz., the 4th, 5th and 8th grade boys. The law of increase of figures holds also for the separate classes, though not for divisions of classes.

Even in individual papers there were few exceptions to the law of increase in figures. On an average there was less than one-fifth of the whole number of pupils who in any one period calculated fewer figures than in the immediately preceding period. Of these, eighteen fell behind in the second period, twenty-eight in the third, and forty in the fourth. On an average 23% of the boys fall behind and only 14% of the girls. This fact may bear out the conclusion drawn from Table III, that the boys lose interest more quickly. Bürgerstein's increase of figures fell off from II to III and then increased from III to IV, the third period serving, he said, as a period of rest for better work in the fourth.

What seems a more probable explanation of the picking up in work on the fourth sheet is the fact not that it follows the third, but that it is the last. Our experiment shows no tendency for better work in the last period. The children seemed to work at their utmost speed throughout the hour. The per cent. of increase in the second and third periods is slightly greater in our experiment than in Bürgerstein's, and a difference of temperament in the children might account for the remaining difference in the two sets of results.

TABLE IV.

*Percentage of Increase in Figures (×1000).*

| | | 8th. | | 7th. | | 6th. | | 5th. | | 4th. | | 3rd. | | All. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Adding. | Copying. | Adding. | Copying. | Adding. | Copying. | Adding. | Copying. | Adding. | Copying. | Adding. | Copying. | Adding. | Copying. |
| Boys | I-II | 115 | 64 | 161 | 109 | 251 | 286 | 204 | 162 | 73 | 79 | 126 | 198 | 173 | 161 |
| | II-III | 24 | 30 | 92 | 100 | 96 | 123 | 147 | 140 | 45 | 48 | 132 | 79 | 97 | 99 |
| | III-IV | —23 | —1 | 78 | 83 | 71 | 96 | —16 | 11 | 3 | —14 | 96 | 94 | 39 | 50 |
| | I-IV | 116 | 93 | 331 | 292 | 418 | 505 | 335 | 313 | 121 | 113 | 354 | 371 | 309 | 310 |
| Girls | I-II | 103 | 108 | 181 | 223 | 381 | 339 | 133 | 182 | 82 | 100 | 96 | 114 | 168 | 183 |
| | II-III | 68 | 64 | 148 | 126 | 70 | 72 | 97 | 90 | 81 | 73 | —15 | 6 | 79 | 75 |
| | III-IV | 38 | 41 | 45 | 76 | 96 | 90 | 78 | 107 | 21 | 46 | 64 | 46 | 58 | 69 |
| | I-IV | 209 | 213 | 374 | 425 | 547 | 501 | 308 | 379 | 184 | 219 | 145 | 166 | 305 | 327 |
| Both | I-II | 107 | 96 | 169 | 156 | 319 | 314 | 166 | 172 | 79 | 92 | 109 | 150 | 169 | 173 |
| | II-III | 57 | 55 | 116 | 111 | 83 | 96 | 118 | 114 | 68 | 64 | 48 | 38 | 87 | 86 |
| | III-IV | 22 | 30 | 64 | 79 | 84 | 93 | 34 | 61 | 15 | 24 | 78 | 67 | 49 | 61 |
| | I-IV | 186 | 181 | 349 | 346 | 486 | 503 | 318 | 347 | 162 | 180 | 235 | 255 | 305 | 320 |

Table IV shows the percentage of increase in figures from one period to another, reckoned on the first period, and from this we can compare sex and grade.

From the totals we see that on the average over 30% more work was done during the fourth period of the hour than during the first. The boys and girls, on an average, increase in amount of work accomplished with about equal rapidity. In the eighth, seventh and sixth grades the girls increase with greater rapidity, in the fifth with about equal, in the fourth again with greater, and in the third with far less. There were several lazy boys of South European nationality in the fourth grade, and they brought down the per cent. The sixth grade has the largest increase in per cent., the seventh and fifth the next. The small percentage in the eighth grade may indicate power to direct the attention more quickly and therefore accomplish more work in the first period, as is shown by the absolute amount of work done. (See Table V.) It is hard to see why the third grade boys should show such a large percentage of increase.

TABLE V.

*Average Number of Errors, Corrections and Figures for Each Individual in all Periods.*

| Grade. | | Errors. | | | Corrections. | | | Figures. | |
|---|---|---|---|---|---|---|---|---|---|
| | | Adding. | Copying. | Both. | Adding. | Copying. | Both. | Adding. | Copying. |
| 8th | Boys | 13.5 | 5.3 | 19.0 | 26.3 | 6.5 | 32.8 | 944 | 956 |
| | Girls | 10.2 | 2.5 | 12.7 | 12.5 | 3.3 | 15.8 | 1030 | 1046 |
| 7th | Boys | 12.8 | 4.9 | 17.9 | 13.7 | 4.7 | 18.4 | 763 | 764 |
| | Girls | 18.6 | 4.3 | 22.9 | 9.2 | 2.1 | 11.3 | 980 | 980 |
| 6th | Boys | 26.0 | 5.1 | 31.0 | 18.4 | 4.7 | 23.1 | 917 | 921 |
| | Girls | 17.6 | 5.4 | 23.0 | 11.2 | 2.5 | 13.7 | 906 | 927 |
| 5th | Boys | 12.6 | 2.8 | 15.3 | 11.3 | 3.4 | 14.7 | 634 | 629 |
| | Girls | 14.7 | 2.1 | 16.9 | 14.4 | 5.8 | 20.2 | 745 | 749 |
| 4th | Boys | 11.3 | 3.7 | 15.0 | 14.1 | 4.0 | 18.1 | 536 | 523 |
| | Girls | 10.3 | 2.0 | 12.3 | 9.0 | 2.4 | 11.4 | 713 | 715 |
| 3rd | Boys | 20.1 | 11.8 | 31.9 | 15.4 | 7.1 | 22.5 | 534 | 525 |
| | Girls | 13.0 | 3.0 | 15.9 | 15.5 | 4.6 | 20.1 | 454 | 435 |
| All | Boys | 15.9 | 5.1 | 21.0 | 15.2 | 4.6 | 19.8 | 703 | 702 |
| | Girls | 13.9 | 3.2 | 17.1 | 12.4 | 3.6 | 16.0 | 788 | 792 |

Table V is of interest as showing the relative number of errors, corrections and figures in the different grades, both

by boys and girls. The totals show the girls superior to the boys; they make fewer errors, fewer corrections, and accomplish more work. In amount of work accomplished the girls are inferior in no grade except the third. Averaging boys and girls, each succeeding grade gets over more work than the one before, except that the sixth accomplishes more than the seventh. This falling behind of the seventh grade was due to the boys and not the girls; the amount of work done by the girls decreases with the grade. The falling behind of the seventh grade boys was probably due to lack of zeal on their part. This was the only class that showed lack of interest; from this class several papers were discarded because of inattention. The boys made more errors than the girls in all grades except the seventh and fifth.

TABLE VI.

*Effect of Gymnastics.*

| Grade. | Period. | Errors. | | | Corrections. | | | Figures. | |
|---|---|---|---|---|---|---|---|---|---|
| | | Adding. | Copying. | Both. | Adding. | Copying. | Both. | Adding. | Copying. |
| 6th Boys | I | 79 | 14 | 93 | 50 | 23 | 73 | 2,837 | 2,880 |
| | II | 98 | 29 | 127 | 79 | 19 | 98 | 2,894 | 2,979 |
| | III | 94 | 30 | 124 | 77 | 26 | 103 | 2,873 | 2,944 |
| | IV | 117 | 32 | 149 | 82 | 18 | 100 | 2,969 | 3,042 |
| 6th Girls | I | 53 | 14 | 67 | 40 | 24 | 64 | 3,557 | 3,626 |
| | II | 86 | 16 | 102 | 70 | 8 | 78 | 3,911 | 3,902 |
| | III | 102 | 24 | 126 | 54 | 8 | 62 | 3,840 | 3,968 |
| | IV | 99 | 20 | 119 | 65 | 19 | 84 | 3,953 | 4,051 |
| 4th Boys | I | 26 | 9 | 55 | 37 | 9 | 46 | 1,485 | 1,445 |
| | II | 33 | 18 | 51 | 59 | 14 | 73 | 1,609 | 1,583 |
| | III | 44 | 4 | 48 | 48 | 20 | 68 | 1,500 | 1,440 |
| | IV | 36 | 15 | 51 | 61 | 11 | 72 | 1,474 | 1,428 |
| 4th Girls | I | 31 | 16 | 47 | 29 | 9 | 38 | 2,241 | 2,218 |
| | II | 54 | 5 | 59 | 54 | 9 | 63 | 2,392 | 2,405 |
| | III | 59 | 17 | 76 | 46 | 11 | 57 | 2,357 | 2,372 |
| | IV | 83 | 5 | 88 | 54 | 11 | 65 | 2,361 | 2,367 |
| All | I | 189 | 53 | 242 | 156 | 65 | 221 | 10,120 | 10,169 |
| | II | 271 | 68 | 339 | 262 | 50 | 312 | 10,806 | 10,869 |
| | III | 299 | 75 | 374 | 225 | 65 | 290 | 10,570 | 10,724 |
| | IV | 335 | 72 | 407 | 262 | 59 | 321 | 10,757 | 10,888 |

The sixth table deals with data from sixth and fourth grades only, and is introduced to show the effect of ordinary school gymnastics between successive periods. It was thought

possible that the fact that this was the second time the experiment was made in these classes would affect both practice and interest, so the experiment was repeated in the eighth grade without the gymnastics, and with very little change in the results. If there was any considerable change in interest or practice, they tended to counterbalance each other.

TABLE VII.

*Increase from Period to Period.*

| Grade. | Period. | Errors. | | | Corrections. | | | Figures. | |
|---|---|---|---|---|---|---|---|---|---|
| | | Adding. | Copying. | Both. | Adding. | Copying. | Both. | Adding. | Copying |
| 6th Boys | I-II | 19 | 15 | 34 | 29 | —4 | 25 | 57 | 99 |
| | II-III | —4 | 1 | —3 | —2 | 7 | 5 | —21 | —35 |
| | III-IV | 23 | 2 | 25 | 5 | —8 | —3 | 96 | 98 |
| 6th Girls | I-II | 33 | 2 | 35 | 30 | —16 | 14 | 354 | 276 |
| | II-III | 16 | 8 | 24 | —16 | 0 | —16 | —71 | 66 |
| | III-IV | —3 | —4 | —7 | 11 | 11 | 22 | 113 | 83 |
| 4th Boys | I-II | 7 | 9 | 16 | 22 | 5 | 27 | 124 | 138 |
| | II-III | 11 | —14 | —3 | —11 | 6 | —5 | —109 | —143 |
| | III-IV | —8 | 11 | 3 | 13 | —9 | 4 | —26 | —12 |
| 4th Girls | I-II | 23 | —11 | 12 | 25 | 0 | 25 | 151 | 187 |
| | II-III | 5 | 12 | 17 | —8 | 2 | —6 | —35 | —33 |
| | III-IV | 24 | —12 | 12 | 8 | 0 | 8 | 4 | —5 |
| All Boys | I-II | 26 | 24 | 50 | 51 | 1 | 52 | 181 | 237 |
| | II-III | 7 | —13 | —6 | —13 | 13 | 0 | —130 | —178 |
| | III-IV | 15 | 13 | 28 | 18 | —17 | 1 | 70 | 86 |
| All Girls | I-II | 56 | —9 | 47 | 55 | —16 | 39 | 505 | 463 |
| | II-III | 21 | 20 | 41 | —24 | 2 | —22 | —106 | 33 |
| | III-IV | 21 | —16 | 5 | 19 | 11 | 30 | 117 | 78 |
| All | I-II | 82 | 15 | 97 | 106 | —15 | 91 | 686 | 700 |
| | II-III | 28 | 7 | 35 | —37 | 15 | —22 | —236 | —145 |
| | III-IV | 36 | —3 | 33 | 37 | —6 | 31 | 187 | 164 |

The difference table (VII) shows that the increase in error and correction is less rapid than in the other tables. The gymnastics may decrease the error (1) by refreshing the blood supply, or (2) by introducing elements of variety and thus affecting interest in the work. It is hard to see how the exercise should give fresh interest in the work over and above that given by the previous four minute rest. Besides, quickened interest would tend to increase the amount of work done, whereas the absolute number of figures calculated was less. Also, the table, of lines bisected (IX) shows less fatigue.

TABLE VIII.

*Per Cent. of Increase in Figures* (×*1000*).

| | Period. | 6th Grade. | | 4th Grade. | | Both. | |
|---|---|---|---|---|---|---|---|
| | | Adding. | Copying. | Adding. | Copying. | Adding. | Copying. |
| Boys | I-II | 20 | 34 | 83 | 95 | 42 | 55 |
| | II-III | —7 | —12 | —74 | —99 | —30 | —40 |
| | III-IV | 34 | 34 | —18 | —8 | 16 | 19 |
| | Sum | 47 | 56 | —9 | —12 | 28 | 33 |
| Girls | I-II | 99 | 76 | 67 | 84 | 87 | 79 |
| | II-III | —19 | 18 | —15 | —14 | —18 | 6 |
| | III-IV | 32 | 23 | 2 | —2 | 20 | 13 |
| | Sum | 112 | 117 | 54 | 68 | 89 | 98 |
| Both | I-II | 64 | 58 | 74 | 88 | 68 | 69 |
| | II-III | —14 | 5 | —38 | —48 | —23 | —14 |
| | III-IV | 33 | 28 | —6 | —5 | 18 | 16 |
| | Sum | 83 | 91 | 30 | 35 | 63 | 71 |

Thus, since the increase in blood supply has reduced the increase in error, we may safely conclude that fatigue is one of the factors which cause the piling up of errors from period to period. We have previously shown that loss of interest is also a factor.

In the table of lines bisected, IX, the first and second columns show the total error made by all the children on Sheet I and Sheet IV respectively. The last column is the per cent of increase in column two over that in column one, reckoned on column one as a basis.

The errors are really double the errors actually made, but as it is only ratios we care for, they were measured thus for convenience. The average increase in error is 32.9%. In each class, even taking the boys and girls separately, there is some increase in error, though it ranges all the way from 2.7% to 114.6%. There is no evident law of increase or decrease of the per cent with age or grade. In bisecting a line there is a chance for an error of perception and an error in adjustment of the hand. Since we get a large or small error, according as these act together or in opposition, we should not expect the increase in error to hold for individual pupils, or strictly for individual classes. And the large probable error here does not show the results untrustworthy. The test

TABLE IX.

*Errors in Bisecting Lines.*

| Grade. | | Beginning of Hour. | End of Hour. | Increase per cent. |
|---|---|---|---|---|
| 8th | Boys | 20 | 23 | 15.0 |
| | Girls | 83 | 92 | 10.8 |
| | Both | 103 | 115 | 11.6 |
| 7th | Boys | 95 | 130 | 36.8 |
| | Girls | 48 | 103 | 114.6 |
| | Both | 143 | 233 | 62.9 |
| 6th | Boys | 87 | 100 | 14.9 |
| | Girls | 149 | 210 | 40.9 |
| | Both | 236 | 310 | 31.3 |
| 5th | Boys | 182 | 187 | 2.7 |
| | Girls | 153 | 202 | 32.0 |
| | Both | 335 | 389 | 16.1 |
| 4th | Boys | 116 | 181 | 56.0 |
| | Girls | 139 | 223 | 60.4 |
| | Both | 255 | 404 | 58.4 |
| 3rd | Boys | 72 | 88 | 22.2 |
| | Girls | 209 | 259 | 23.9 |
| | Both | 281 | 347 | 23.5 |
| All | Boys | 572 | 709 | 23.9 |
| | Girls | 781 | 1,089 | 39.4 |
| | Both | 1,353 | 1,798 | 32.9 |
| | | *With Gymnastics.* | | |
| 4th | Boys | 132 | 165 | 25.0 |
| | Girls | 81 | 135 | 66.6 |
| | Both | 213 | 300 | 40.8 |
| 6th | Boys | 101 | 103 | 2.0 |
| | Girls | 141 | 139 | —1.4 |
| | Both | 242 | 242 | 0.0 |
| Both | Boys | 233 | 268 | 15.0 |
| | Girls | 222 | 274 | 23.4 |
| | Both | 455 | 542 | 18.9 |

agrees with Bryan's[1] test on precision of movement, in that the entire absolute error made decreases regularly as we as-

[1]Bryan, "On the Development of Voluntary Motor Ability." *Am. Jour. Psy.*, V.

cend the grades. This shows the test to be sufficiently accurate to warrant the conclusions drawn from the totals.

The fatigue shown by this increase of error in bisecting the lines on the fourth sheet probably does not consist so much in fatigued muscles and inability to control the hand as in a loss of sensitiveness. For, those children who used the muscles most, *e. g.*, cramped the hand the hardest, were noted, and it was not found that they showed a greater average of error at the end of the exercise than the rest. Besides, if the fatigue were due to tired muscles, we should have an equally large increase in error in the results with gymnastics.

We have already drawn the conclusion that the girls maintain more interest than the boys. The tables show that they become more fatigued. In each grade, except the eighth, the girls show more fatigue than the boys. But there are only four boys in this grade, and they are younger than the girls.

The result of gymnastics is to decrease the error in bisecting the lines. The per cent. of increase is, in both the fourth and sixth grades, much smaller when physical exercises intervened, giving an average less than one-half as large. Fechner[1] held that discriminative ability in judging of lifted weights increased when he increased the pulse rate by vigorous exercise.

From Tables VII and VIII we see the effect of gymnastics upon the amount of work accomplished. There is an increase from I to II, a decrease from II to III, and again an increase from III to IV. The increase from I to II and the decrease from II to III hold for each class, while from III to IV there is an increase in the sixth grade, and a decrease in the fourth.

Table VIII shows the percentage of increase or decrease in the work accomplished with gymnastics. Comparing it with the corresponding tables of the other set, we see that the percentage of increase is in each grade about one-fifth of the percentage without gymnastics. The effect of breaking in upon mental work with physical exercise is to decrease what might be called the momentum of the mind.

Dresslar[2] likewise found that the rate of tapping with the finger, which he takes as an index of central activity, fell off after a brisk walk. So, if we may draw any conclusions from such rough tests, long continued mental activity tends to diminish sensitiveness to difference (perceptive attention), but breaking into the work with physical exercises tends to

---

[1] Psycho-Physik, I, 313.

[2] "Some Influences which Affect the Rapidity of Voluntary Movements." *Am. Jour. Psychology*, Vol. IV, No. 4, Aug., 1892.

increase it. A more delicate test, and one made at the beginning and end of each sheet, would be of greater interest, but any very delicate test is impracticable in the school-room. A careful study here of the nature of the errors will be of interest, particularly as our material will allow us to do what Bürgerstein's would not, *i. e.*, determine what kind of errors increase most rapidly as fatigue sets in.

Errors in adding were either errors in computation or errors alike in kind to those made in copying. There were three possible causes for errors of computation : (1) Introducing a " one to carry " when it did not exist, (2) omitting it when it did exist, and (3) making some wrong association in combining the two numbers. Even when an error was obviously one of computation, it was not always possible to decide to which of the three classes it belonged. Though no definite figures could be obtained, this statement can safely be made, that in general the omitting to carry a remainder increased far more rapidly from period to period than carrying one when none should be carried. This holds for many of the classes, but not for all. Omission, perhaps, is the best measure of psychical fatigue. Bolton[1] gives omission as the last stage in the fading away of a memory image.

There were several instances where the majority of errors on a given paper were caused by a repetition of the same wrong association. The fact that it is easier to repeat an error than to make it for the first time will probably account for such mistakes. There were several instances where two figures were apparently multiplied instead of added, and errors which might possibly have been subtractions also occurred.

The copying errors made in adding were nearly all caused by what may be called attraction. They consisted in writing down a previous oft-recurring figure of the answer, one of the figures of the sum in question, or a figure of the previous or following sum. There are also more complicated ways in which such errors might occur ; for example, an oft-recurring figure in the answer may be substituted for one of the figures to be added. In this case the attraction comes in the first step of the work, before the association or computation takes place. Most of the errors of attraction occur in writing down. Many of those apparently due to attraction, however, may be due to other causes, for there are at least seven positions where a figure might thus influence the answer, and there are only ten digits, and so the chances that the figure which is incorrectly written in the answer will also be in one

[1] *Am. Jour. Psy.*, Vol. IV, p. 367.

of these seven positions, are, apparently, seven to ten. So, by mere chance, seven of all the errors might be classified as errors of attraction, and if attraction were really an active cause of error, the fraction would be larger. Were it not that our figures are too few for the application of the law of probability, we might, perhaps, in this way get at the ratio of errors of computation to errors of copying.

Omissions of one or more sums in a series were very infrequent, running from none in the first period to twelve in the fourth, and aggregating only twenty-two in all. They probably occur in those grades where the writing was poorest, as they are generally caused by the fact that the child writes large careless figures, and his answer gradually slides to the left, beyond the corresponding figures to be added. Nine of the twenty-two such errors occurred in the sixth grade, the class that hurried most.

The serial error already referred to remains to be considered. Such errors Bürgerstein had in abundance in his data, but, as previously stated, our material was selected with a view to avoid such errors and the consequent difficulty in evaluating them. There are in all only eighty-four such errors out of 6,521 errors in addition, or less than 1.3%, whereas Bürgerstein had 2,087 out of 6,514, or about 30%. The serial errors are not contained in any of the tables, as they are too few to affect results; besides, they are nearly proportional in the four-time periods to the whole number of errors.

The errors of copying fell into five general classes: omissions, repetitions, insertions, substitutions, and translocations. Of course, repetitions are only special forms of insertion, but they have been classified separately. Many of the errors arise from transference of figures from one side of the paper to the other, and they occur only when there is a special arrangement of the figures copied. They are of two kinds, omissions and repetitions. As an example of the first, 372,720 was copied 3,720; of the second, 932,384 was copied 93,232,384. Omissions were more frequent than repetitions, as Table X shows. Such errors are most frequent in the third grade; in the other classes they are about proportional to the whole number of errors.

The cause of such errors is very obvious. The figures are probably copied in groups. When the eye comes back to the line of figures to be copied, it seeks the last figure or figures of the previous group, and if such figures occur twice in close proximity, omissions or repetitions of the intervening figures may result. In the eighth, fifth and fourth grades, a list was made of all those children who made a practice of keeping their fingers upon the figures that they copied. In their

TABLE X.

*Classification of Errors of Copying.*

| Grade. | Omissions. | | | | | Repetitions | | Insertions. | | Substitutions. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Of Transference. | In Combinations like 585. | Of Repeated Figure. | Other Omissions. | *Sum. | Immediate. | Of Transference. | Making a Combination like 585. | Other Insertions. | Because of Badly Written Figure. | By Repeating a Figure. | Making a Combination like 585. | Other Substitutions. | †Sum. | Translocations. | All. |
| 8th | 10 | 9 | 1 | 7 | 17 | 5 | 0 | 2 | 1 | 4 | 1 | 4 | 2 | 7 | 3 | 49 |
| 7th | 17 | 21 | 9 | 18 | 48 | 10 | 17 | 0 | 0 | 9 | 1 | 2 | 1 | 4 | 7 | 112 |
| 6th | 22 | 31 | 10 | 27 | 68 | 11 | 0 | 2 | 0 | 14 | 2 | 4 | 6 | 12 | 18 | 147 |
| 5th | 17 | 14 | 4 | 16 | 34 | 5 | 10 | 1 | 3 | 5 | 3 | 2 | 2 | 7 | 6 | 88 |
| 4th | 18 | 12 | 4 | 8 | 24 | 5 | 7 | 0 | 0 | 10 | 3 | 2 | 1 | 6 | 1 | 71 |
| 3rd | 33 | 19 | 6 | 27 | 52 | 20 | 21 | 4 | 4 | 4 | 0 | 2 | 4 | 6 | 1 | 145 |
| All | 117 | 106 | 34 | 103 | 243 | 56 | 55 | 9 | 8 | 46 | 10 | 16 | 16 | 42 | 36 | 612 |

*Not including omissions of transference. †Not including those caused by a badly written figure

papers such errors should not occur, and with two or three exceptions they did not. But, of course, it was impossible to watch each child all the time, and this device may have been used part of the time without my knowledge.

There were two other classes of omissions, (1) of a repeated figure, and (2) of a figure in such a combination as 585, when one of the 5's would be omitted, the second most frequently. These errors were equally frequent in the paper when the children kept the place with the finger and when they did not. Hence they were probably not omitted at the beginning or end of a group, but simply dropped out of it.

The whole number of omissions, not including omissions of transference, are about proportionate in the various grades to the whole number of errors of copying. The cause of an omission may be that the children ideate the figures more rapidly than they can write them. The tables show that omissions are most likely to occur in combinations like 585. When the thought gets ahead of the hand there is a tendency to omission, but the omitted figure may be recalled and written in the wrong position. A translocation is the result.

Translocations are more frequent in the upper than in the lower grades. In a combination like 585, however, the impulses for the two 5's being alike, are blended into one, or two ideations are satisfied by a single motor impulse, and the result is a single 5. For the same reason a repeated figure is likely to be omitted.

Insertions occurred less frequently than any other errors, only seventeen times in all. Nine of these seventeen were made by repeating a figure so as to make a combination like 585. This is merely a remote repetition. Most of the other eight insertions were also remote repetitions; there is little doubt, for example, that where 8,326 was copied 86,326, the inserted 6 was innervated because of the preceding 6, and also that where 31,672,314 was copied 314,672,314, the 4 was inserted because of the previous 314.

Next to omissions and repetitions, substitutions occurred most often. Out of eighty-eight substitutions forty-six were due to a badly written or badly scratched figure of the answer. This is the only measure we have of the poorness of the writing during the four periods. It would be hard to tell, by merely looking at the papers, in which period the writing was most careless. Of these errors, however, two occurred in the first period, four in the second, seventeen in the third, twenty-three in the fourth. It is interesting to notice that such errors occur most frequently in the class where omissions of part of the sum were most frequent. Of the remaining substitutions, ten were substitutions of the immediately preceding figure, and sixteen were of the one before it. Thus, 86 was written 66 and 875 was written 575.

Of course it was impossible to account for every error in copying; there may be, as Bolton[1] suggests, permanent association of figures in the child's mind, such as a date or a number of a house.

Errors of transference tend to decrease from period to period, and all other errors to increase. Omissions and substitutions increase most rapidly.

The remaining tables were made with a view to discovering which decreased most rapidly in the course of the hour's work, perceptive or reproductive attention. Copying may be taken as a measure of perceptive attention, but adding involves both kinds. An addition consists of several steps: (1) the comprehension of the figures seen, (2) the associative process of adding, (3) the retention of the result until set down, and (4) the motor processes of writing down the result. In copying the answer, the associative process

[1] *Am. Jour. Psy.*, IV, p. 375.

is omitted, and there is the further difference that the figures are retained and set down in groups of two or more.

Now, while it cannot be assumed that a subtraction of the errors in copying from the total of the errors appearing in the additions will leave us exactly the errors of computation, yet the process will probably show the general trend of the law of variation in error in each case; for the errors of transference from one side of the paper to the other, which occur in copying, would be in some measure compensated for by the greater number of errors in the motor processes of the additions, which in turn arise from the greater complicity of the immediately preceding processes.

The first column of figures in Table XI contains errors in computation, found by taking the errors of copying, exclusive of errors of transference, from errors of addition. The second column contains errors of copying; this column is taken immediately from the other tables.

The increase in the errors of computation follows a different law from the increase in the errors of copying. In errors of computation the increase from II to III is greater than from I to II, and greatest from III to IV, the whole increase from I to IV being 125%. Errors of copying increase 8% from I to II, 87% from II to III, and decrease 24% from III to IV, the whole increase from I to IV being only 71%.

There is a large increase in errors of copying in the third period. If this were due to fatigue, why should the errors fall off so much in the fourth period while in the computation they increase 59%? Now, addition is a process that the children practice every day, while copying a long line of figures backwards is not, hence practice would probably affect the number of errors in the latter more than in the former. The decrease from practice does not counterbalance the increase caused at least in part by fatigue, and probably carelessness as well, until the fourth period. This sudden jump, however, from a large increase to a large decrease is unaccountable, unless we either accept Bürgerstein's hypothesis of the third period as one of rest and resulting in an improvement in the fourth period, or what seems to the writer more probable, that fresh interest results from the fact that it is the last sheet.

Taking all the errors of adding together, our results agree with Bürgerstein's, but an analysis of the errors shows that the agreement is not due to the perceptive and motor processes of writing down figures, but to processes of reproductive association concerned in computation. Fatigue of reproductive association increases and at an increasing rate through the hour.

TABLE XI.

*Errors of Computation and of Copying.*

| | Period. | 8th Grade. | | 7th Grade. | | 6th Grade. | | 5th Grade. | | 4th Grade. | | 3rd Grade. | | All. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boys | I | 2 | 8 | 31 | 12 | 23 | 6 | 45 | 6 | 12 | 7 | 24 | 14 | 137 | 53 |
| | II | 8 | 1 | 26 | 8 | 42 | 15 | 33 | 12 | 19 | 8 | 10 | 27 | 138 | 71 |
| | III | 17 | 6 | 45 | 24 | 103 | 22 | 33 | 23 | 30 | 12 | 28 | 40 | 256 | 127 |
| | IV | 17 | 6 | 46 | 29 | 115 | 23 | 79 | 9 | 36 | 14 | 46 | 25 | 339 | 106 |
| Girls | I | 11 | 6 | 9 | 8 | 34 | 9 | 48 | 9 | 20 | 9 | 36 | 13 | 158 | 54 |
| | II | 15 | 8 | 32 | 4 | 35 | 17 | 58 | 4 | 25 | 7 | 37 | 4 | 202 | 44 |
| | III | 26 | 7 | 33 | 16 | 52 | 23 | 50 | 12 | 30 | 7 | 43 | 16 | 234 | 81 |
| | IV | 32 | 7 | 59 | 11 | 72 | 32 | 69 | 13 | 61 | 7 | 34 | 6 | 327 | 76 |
| Both | I | 13 | 14 | 40 | 20 | 59 | 15 | 93 | 15 | 32 | 16 | 60 | 27 | 295 | 107 |
| | II | 23 | 9 | 58 | 12 | 77 | 32 | 91 | 16 | 44 | 15 | 47 | 31 | 340 | 115 |
| | III | 43 | 13 | 78 | 40 | 155 | 45 | 83 | 35 | 60 | 19 | 71 | 56 | 490 | 208 |
| | IV | 49 | 13 | 105 | 40 | 187 | 55 | 148 | 22 | 97 | 21 | 80 | 31 | 666 | 182 |

TABLE XII.

*Increase from Period to Period of Errors of Computation and of Copying.*

| | Period. | 8th Grade. | | 7th Grade. | | 6th Grade. | | 5th Grade. | | 4th Grade. | | 3rd Grade. | | All. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I-II | 6 | —7 | —5 | —4 | 19 | 9 | —12 | 6 | 7 | 1 | —14 | 13 | 1 | 18 |
| Boys | II-III | 9 | 5 | 19 | 16 | 61 | 7 | 0 | 11 | 11 | 4 | 18 | 13 | 118 | 56 |
| | III-IV | 0 | 0 | 1 | 5 | 12 | 1 | 46 | —14 | 6 | 2 | 18 | —15 | 83 | —21 |
| | I-II | 4 | 2 | 23 | —4 | 1 | 8 | 10 | —5 | 5 | —2 | 1 | —9 | 44 | —10 |
| Girls | II-III | 11 | —1 | 1 | 12 | 17 | 6 | —8 | 8 | 5 | 0 | 6 | 12 | 32 | 37 |
| | III-IV | 6 | 0 | 26 | —5 | 20 | 9 | 19 | 1 | 31 | 0 | —9 | —10 | 93 | —5 |
| | I-II | 10 | —5 | 18 | —8 | 20 | 17 | —2 | 1 | 12 | —1 | —13 | 4 | 45 | 8 |
| Both | II-III | 20 | 4 | 20 | 28 | 78 | 13 | —8 | 19 | 16 | 4 | 24 | 25 | 150 | 93 |
| | III-IV | 6 | 0 | 27 | 0 | 32 | 10 | 65 | —13 | 37 | 2 | 9 | —25 | 176 | —26 |

TABLE XIII.

*Per Cent. of Increase (Reckoned on I).*

| | Period. | 8th Grade. | | 7th Grade. | | 6th Grade. | | 5th Grade. | | 4th Grade. | | 3rd Grade. | | All. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I-II | 300 | —88 | —16 | —33 | 83 | 150 | —27 | 100 | 58 | 14 | —58 | 93 | 1 | 34 |
| Boys | II-III | 450 | 63 | 61 | 133 | 265 | 117 | 0 | 183 | 92 | 57 | 75 | 93 | 86 | 106 |
| | III-IV | 0 | 0 | 3 | 42 | 52 | 17 | 102 | —233 | 50 | 28 | 75 | —171 | 61 | —40 |
| | I-IV | 750 | —25 | 48 | 142 | 400 | 284 | 75 | 50 | 200 | 99 | 92 | 15 | 148 | 100 |
| | I-II | 36 | 33 | 256 | —50 | 3 | 89 | 21 | —56 | 25 | —22 | 3 | —69 | 28 | —18 |
| Girls | II-III | 100 | —17 | 11 | 150 | 50 | 67 | —71 | 89 | 25 | 0 | 17 | 92 | 20 | 69 |
| | III-IV | 55 | 0 | 289 | —62 | 59 | 100 | 40 | 11 | 155 | 0 | —25 | —77 | 59 | —9 |
| | I-IV | 191 | 16 | 556 | 38 | 112 | 256 | 44 | 44 | 205 | —22 | —5 | —54 | 107 | 42 |
| | I-II | 77 | —35 | 45 | —40 | 35 | 113 | —2 | 7 | 38 | —6 | —22 | 15 | 15 | 8 |
| Both | II-III | 154 | 29 | 50 | 140 | 137 | 87 | —9 | 127 | 50 | 25 | 40 | 93 | 51 | 87 |
| | III-IV | 46 | 0 | 68 | 0 | 56 | 67 | 70 | —87 | 116 | 12 | 15 | —93 | 59 | —24 |
| | I-IV | 277 | —6 | 163 | 100 | 228 | 267 | 59 | 47 | 204 | 31 | 33 | 15 | 125 | 71 |

The results in the separate classes are too irregular to admit of much careful comparison as to grade and sex. The totals, however, show that the percentage of increase from the first to the fourth period is larger for boys than for girls, both in errors of computation and of copying. The ratio of increase in copying errors to increase of errors of computation is far larger for the boys than the girls. The results of classifying the errors of the experiment with gymnastic exercises between the periods are of little additional value, except in so far as they corroborate the conclusions already drawn. The percentage of increase from I to IV of the two kinds of errors bears about the same ratio as in Table XIII. The increase in errors of copying is smaller in each succeeding period, with a decrease in the fourth. Here, as before, the effects of practice may be seen. This is the second time the work was taken in these grades, and therefore any effects that novelty might have are here eliminated to a large extent. The ratio of the increase in errors of copying to that in errors of computation is here much smaller from I to II and II to III than when the experiment was taken for the first time.

To sum up, then, we may say that as the mind becomes fatigued, it is the more complex associations of computation which are affected rather than the simpler ones involved in the somewhat mechanical process of copying; that the reproductive rather than the perceptual attention is affected with fatigue. Bürgerstein assumes fatigue to be the sole cause of the increase in error through the hour, and he has not shown that loss of interest is not also a factor. Our results seem to warrant the conclusion that it plays an important though not determinable part throughout the experiment.

In conclusion, I wish to acknowledge my indebtedness to Mr. Frank Russell, superintendent of schools, San José, for permission to conduct the experiment in the public schools; and also to Mr. H. M. Bland and his teachers for their kind sympathy and assistance in the work. To Dr. F. Angell is due the suggestion not only of the experiment itself, but also of much of the detail of the work.

# PUNISHMENT AS SEEN BY CHILDREN.

By Earl Barnes.

Punishment with savages rests on revenge, it is getting even with the offender; later on, in civilization, it rests on the attempt to frighten the offender and all would-be offenders, thereby protecting the law-abiding; among still more highly civilized people it tends to become a remedy,—a means of instructing or curing imperfect or diseased minds. In our treatment of children to-day, I take it, no one would uphold a punishment inflicted simply to get even with the child; revenge is unworthy the man who has the care of a child in his hands. So, too, any punishment inflicted simply to frighten a child would be considered unworthy of any intelligent parent or teacher unless the fear aroused was looked upon as an element necessary to the child's well-being, or to the protection of his fellows. All punishment, we say, should be remedial in its nature, hence any punishment which leaves the child in a worse state of mind than it found him, which leaves him ugly and revengeful, or cowardly and hopeless, is wrong, and from the point of view of the intelligent teacher, has been a failure. What the child ought to feel has nothing to do with the case. Our problem is the same as that of the physician: How has the remedy which we have applied actually affected the patient? Has it left him better or worse than he was before?

If we are right in feeling that punishment is justifiable only when it is remedial, then it becomes a question of the first importance to determine how boys and girls of different ages at present react against different sorts of punishments, for different classes of offenses, in the home or in the school. In the hope of reaching some tentative generalization, I have gathered some thousands of concrete instances from school children, mainly in California, though a few hundred came from the Mississippi valley. While discipline in California homes and schools is probably less severe than in New England, I believe it rests on a very intelligent basis and is representative of the best conditions in America. The data

were gathered as composition exercises, the children being given the following directions:

1. Describe a punishment which you have received which you think was unjust, and tell why you think it unjust.

2. Describe a punishment which you have received which you think was just, and tell why you think it just.

In working up the papers I collated the boys and girls of each age, from seven to sixteen inclusive, separately. The following pages are based upon a study of 2,000 papers describing unjust punishments, and 2,000 describing just punishments. The age, however, has little significance in this study, as the older children often describe punishments received when very young.

Of course there are objections to such a method of inquiry, which occur at once to any intelligent person. In the first place it will be charged that such a broad investigation must do violence to the details involved and give only vague, crude results. This charge I am ready to admit, but would urge that a rough preliminary survey is all that our present state of ignorance allows. When a new country is to be entered, even the rudest sketch of its mountains and rivers is of use. I believe this statistical method can do such a service for child study.

Other criticisms apply to details in the method: it will be said that untrained teachers will impose their own ideas on the children, or will otherwise interfere with their free expression; that children will fix their compositions to suit the people who are to read them; that children cannot accurately describe their inner states, or that what the children write will depend on the mere accident or circumstance, as little amenable to law as the number of pebbles by the road side, and that our data reveal, in part, true childish reactions, but largely what the child has been told and seen. To answer these criticisms briefly, I would say: Our teachers are interested in their children, and eager to help any one who is in earnest to study them. The slightest hint or suggestion given by a teacher affects all the papers in her room and is quickly detected by an experienced observer. If the teachers understand this, and if the work is given out at a particular hour, with a request from the superintendent that the first rude drafts, uncorrected, be sent directly to his office, and if the test is so simple that the teacher has only to submit the subject and gather the papers, his personal equation need not greatly color the results. For the pupils, it may be said that they, too, love to tell the truth, and if the papers are for some one outside the school, they will express themselves with great freedom; the very fact that they cannot clearly tell you

whether a punishment is just or unjust is itself a part of the phenomenon we are studying, and of value for us to know; besides, who among us can express clearly a philosophical reason for considering a punishment just or unjust? The charge that we are dealing with accidents can be answered only by the papers themselves. During the last five years I have worked over expressions in writing and drawing from more than thirty thousand children, and the more I work the more there grows in me the realization that in the subjective life of children, as in all the rest of the world, we are dealing with phenomena that follow well defined laws, and that if we will take any simple strand of activity and gather our materials from a large body of children, we can formulate a law which will hold true for any similar large body of children under similar circumstances. As to the difficulty of separating the child's psychology from the imposed beliefs and practices, this difficulty inheres in all study of the subjective world, and in the great variety of environment represented in these papers, some parts will cancel out others by overlappings.

Of the 4,000 children whose papers we examined, 265 girls and 246 boys say they cannot remember ever having had an unjust punishment; 33 girls and 24 boys say the same about the just punishment, making 568 cases in all. 2½% of 2,000 children cannot recall a just punishment, and 25% of the other 2,000 cannot recall an unjust punishment. Probably this 25% represents one of the most uncertain quantities involved in this study, as all who did not care to describe an unjust punishment would find inability to remember one an easy excuse.

In working up the 3,432 cases described, it was found convenient to divide each case into its three elements: the offense charged, representing the point of view of the punisher; the punishment received, presumably identical from all points of view; and the reason why just or unjust, as seen by the recipient.

First, we will examine the offenses: 568 say they never had an unjust punishment, and 274 did not name the offense in such a way as to be intelligible, so that we have left 3,139 offenses with which to work. Of these cases reported, 542, 16%, were general disorder, pushing in line, slamming doors, and the like; if to this we add 250 cases of talking or whispering, and 188 cases of being late, it gives 980 cases of disorder, 29%. Disobedience comes second on the list, with 379 cases, 11%; then comes running away, with 353 cases, 10%; fighting or quarreling, 348 cases, 10%; destroying things, 318 cases, 9%; poor work, 332 cases, 9%; rudeness

or impudence, 96 cases, 3% ; taking things or stealing, 90 cases, 3% ; story telling or lying, 45 cases, 1%. This leaves 217 cases that have to go under the general heading miscellaneous. Of course, in dealing with the concrete cases it was sometimes possible to place them under any one of two or three headings, but in nine-tenths of the instances their classification was easy and clear.

To put the matter differently, we may say that a quarter of the offenses specified are negative in character, and the remainder aggressive. Incapacity and carelessness on the part of the children may be supposed to lie back of such misdemeanors as poor work, being late, and destroying things, the last named division including many tales of accidents. 23% of all the offenses fall into this category of omissions.

Of the 62% of aggressive crimes, 47% are evidence rather of misdirected energy than moral obliquity. Disorder, rudeness, talking and whispering, quarreling and fighting, running away,—these are spurts of waste steam rather than the rattling of defective machinery.

Judged by the Mosaic standard the children make a good showing, only 15% of the offenses charged being condemned by the Tables of Stone. Swearing, Sabbath-breaking and all breaches of religious observances, envy, and such cases of cruelty as our nineteenth century consciences brand as inimical to the spirit of the sixth commandment—these are all so rare as to be massed among many others in the miscellaneous group. Stealing and lying form but 4% of all crimes recorded, and the only considerable infringement of the Decalogue lies in the line of disobedience. Rebellion against organized laws and observances is as old-fashioned as Eve, and it is notable that from Luther to the modern social reformer and our own school children, revolt seems still to fairly hold its own.

Justice or injustice did not generally inhere in the offense charged nor in the form of punishment received, but rather in the adjustment of the two ; hence the two lists of offenses and punishments are similar. Many more cases of disobedience, lying and running away are cited as just than as unjust, however, and punishments for poor work, talking or whispering, being late, quarreling and fighting lean to the side of justice, while stealing and rudeness hover between the two camps. The only offenses in which injustice largely predominates are disorder and destroying things. The accident divides honors with surplus vitality as a source of unjust punishment.

There is little difference between the offenses committed by the boys and the girls. The girls are more often in trouble

with disobedience and poor work and breaking or destroying things—the petty offenses of the home. The boys are punished a little more often than the girls for running away, they talk as much as the girls do, they are about as often tardy, they tell about as many lies, and they have only a few more cases of assault and battery to answer to than the girls have. Evidently the new woman is starting with the generation.

Passing now from the offenses charged to the punishments received, we find that the 4,000 children give 2,801 specific punishments. As before, 568 remember no punishment, and 631 omit the punishment in reciting their cases. Thus the children are less specific in naming their punishments than in describing their accusations. Of the specific punishments named, 1,174, 34%, were whippings. With many of the children whipping is synonymous with punishment, some even saying that they have had no punishment—have only been scolded or shut up. If we add to these whippings 240 cases of shaking, striking or slapping, we have corporal punishment furnishing 41% of the total cases cited. This does not mean that 41% of the punishments received by children are corporal, but it must at least mean that these punishments linger long in the mind and are easily called up when wanted. While we cannot distribute the punishments by ages, owing to the fact that children are often describing punishments received years back, it is still interesting to note that seven-year-old children give more than twice as many cases of corporal punishment as the sixteen-year-old children do. The cases of whippings, shaking and striking given by children from seven to sixteen, make a series running 193, 176, 159, 163, 127, 135, 126, 136, 118, 91, forming a pretty uniform movement. This agrees with the study made by Miss Margaret Schallenberger on "Children's Rights," in showing that corporal punishment plays a steadily decreasing rôle in children's minds as they grow older. Confining comes next to whipping, with 622 cases, 18%. Under this heading we included all cases of being deprived of liberty to move about, except being sent to bed. If we add 110 cases of this latter class, it makes 732 cases, 21%, of confinement in all. 279 children, 9%, were scolded; 113, 3%, lost a treat of some sort; only 69, 2%, had marks or checks; 50, 2%, had extra work imposed; 36, 1%, lost a meal; and only 15, ½%, had to correct the harm. This leaves 93, 3%, forming a miscellaneous group.

If we compare the punishments received in those cases called just with those received in cases called unjust, we find that the punishments are severer in the just group than in

the unjust. 681 whippings are called just against only 493 that were called unjust, and a careful reading of the papers shows that children do not object to any of the ordinary forms of punishment because of the penalty itself. It is because of other conditions. There are, however, 423 cases of indefinite just punishments, against 208 indefinite unjust punishments, while the indefinite offenses are about even, 140 to 144, showing that the feeling of injustice keeps details fresh in the memory.

The fact that deprivation prevails as a form of punishment among girls is in harmony with the more negative character of their offenses. As poor work, talking, rudeness and disobedience are less aggressive crimes than running away, fighting and disorder, so confinement and loss of treat, low marks, scolding and shaking are milder and less active penalties than the whipping so generally inflicted on the boys.

The conclusions that come from this study on penalties are that with the children studied the common form or type of punishment, just or unjust, that lingers longest in their minds, is still some form of bodily pain; that children do not object to severe penalties as such; that checks and extra work have ceased to be much used as punishment, or else make a slight impression on the mind; that we treat boys more severely than we do girls; and that the most civilized form of penalty known, correcting the harm, is hardly connected in children's minds at all with misdemeanors. Evidently we keep penalties before the children's minds rather as fear-inspiring objects than as remedial agencies, or else children are in that state of development where they naturally look upon punishment from this point of view.

In telling why a punishment received is just, the children show great uncertainty and vagueness. Most of them focus their attention upon the offense and their own relation to it. The punishment was just because it balanced the crime. It was atonement. A second class think only of the punisher, and recognizing him as just, they accept what they get; while a small third class think of the effect of the punishment upon themselves.

Taking from the 2,000 papers describing just punishments those of 57 children who say they have never had a just punishment, and 851 who give no reason for considering their punishments just, we have left 1,092 papers, 55%, which give some sort of reason for considering their punishment just. Of these papers, 837, 77%, look upon the punishment as simply offsetting the offense, the teacher or parent is one of the forces of nature. If they run into him they

must expect a reaction, that is, a punishment. This is just. It is as though the child said: "It rains; if I go out I shall get wet." All right, I go. The wetting is the punishment. The answers which we placed in this group were generally very brief: "I deserved it," "I ought to have it," "I did wrong," "I intended to do it," "I disobeyed," "I knew better," or "I was careless." Sometimes they go more into detail, but generally a couple of phrases settle it. "I paid up," would cover most of these cases. As a girl of eleven says: "One time when I was visiting my Aunty S., she wanted to wash my head and I began to cry. She washed my head anyhow. I cried so hard that she whipped me and locked me in a room. I think I deserved it." Another girl of nine says: "Once my grandmother slapped me because I woun't say my prayers, and I think I needed it. I was very bad." We should expect that the immature children would more often give this reason and that it would decrease with each year of age. The table, however, is rather indeterminate in its testimony.

In the second case the whole responsibility is shifted to the one who inflicts the punishment. The punishment was just because it came from the parent or the teacher. This is, of course, blind following of authority, and only 76 children, 7% of those who give reasons, give this one. Probably many cases in the first group would pass over to this had they been answered more in detail. As would be expected, the number of children giving this reason falls off as we go from seven to sixteen. The series for the successive years runs: 17, 19, 13, 6, 8, 2, 3, 4, 3, 1.

In the third group the punishment is looked upon as in some way affecting the culprit for his good. 137 children, 12% of those who give reasons, agree with this. They say, generally, "I needed it," or, "It was for my good." Exactly how the good comes to them is a little obscure oftentimes, as in the instance of a girl of eleven who says: "I got a whipping because I didn't know my A B C's. I couldn't remember them, and I got a whipping, and I think I deserved it becaus I wouldn't say them, and they told me to set down and I did, but I wouldn't say them and they whipped me again and then I remembered them." The number giving this reason increases, as would be expected, from seven-year-old children to the oldest class. The series runs: 9, 8, 10, 13, 6, 11, 19, 18, 20, 23.

From a careful study of such a bunch of papers, one reaches some conclusions which are hard to express in quantitative terms. The most important of these general conclusions is a realization of the fact that children accept a

good deal of what they get without serious question. They have been told so often the same old story about needing punishment that they accept and return the phrases even where they must know better. Take, for example, the following case from a girl of ten: "One day my brother hurt himself, and he thought it was I. I did not do it. It was on the grass. My mother took me and put me in my bedroom and would not let me play any more. I think that I deserved it." Then again, the children have sometimes confused and unsettled ideas of what we mean by just or unjust, or of what we mean by punishment itself. Take, for instance, the following, written by a girl of fourteen: "A little girl went to visit her grandmother and she had to do some knitting and other things every day while she was there, and her mother would not make her do only a few tasks and then let her amuse herself any way so that she would not do any harm. I think this was an unjust punishment." Or take the boy of eight who gives a dozen unjust punishments, of which this is a type: "My brouther fell down the steps and stuck his foot on a nale the other day, bad."

In conclusion we can say:

Nearly all children have punishments which they consider just.

42% of the children can give no reason for considering their punishments just, though they accept them as such.

The most common reason in children's minds for considering a punishment just rests on the feeling that an offense can be paid for in pain. This view decreases with age.

12% of the children feel that punishment some way does them good, though they hardly see how.

7% of the children put the responsibility on the punisher's shoulders, accepting what comes in the name of authority.

In general, children's notions of what makes punishment just are very vague, not becoming very clear even in the high school.

In examining the reasons given by 2,000 children for considering their punishments unjust, we must first take out the 511 children who remember no unjust punishments, and 352 more who give no reason, or a very indefinite reason for considering the punishment unjust. This leaves us 1,137 reasons to consider. First among these comes a large group, 462 children, 41% of those who gave reasons, who declare that they were innocent; they did not commit the offense for which they were punished. As a boy of nine says: "One time, about four years ago, we had several chickens; among them were a rooster that fought a pet duck that I had, and killed it, and my father whipped me for it. I think this was

unjust." In collating the stories, the cases of innocence fell into three groups: 207 children simply declare themselves innocent; 200 say it was some one else, and 55 claim to have been lied about. The plea of innocence is made about equally by the younger and the older children.

The second group is composed of 312 children, 27% of those who give reasons, who admit the offense, but claim irresponsibility. They say they couldn't help it, the act was necessary, they didn't know any better, they forgot, they were obeying some one else, or they were ignorant of the charge preferred against them. The "couldn't help it" class is largely recruited from accidents. There were 168 cases of this sort. To say that the act was necessary was, of course, to say the same thing in a different phrase. There were but seven children who said this, showing that their attention is focused rather upon themselves than upon any abstract quality of the act. The plea of ignorance is entered by 79 children. A boy of eight illustrates the group: "Satday I pulled up one of papa's onion thet he planted, and he gave me a whipping. I dident know he cared." Only 27 put in the plea that they forgot, and but 21 claimed to have been obeying some one other than the punisher; 9 claimed to have been ignorant of the offense for which they were punished, and many others gave evidence of being hazy about it, as when a girl of nine says: "Was it not fair that I had a shaking one day at school and I do not know why did I get that punishment."

The third group of children admit that they committed the act charged, but they claim that the act was right. A girl of thirteen puts it thus: "One time, when I was eight years old, I went outdoors to play. I didn't put on any hat nor shawl. It was a foggy morning. I played in some water. I got whipped two or three times two or three mornings for it. It didn't hurt much, so I don't care. I don't think I deserved it because I do that every night and morning now."

The fourth group of 214 children, 19% of those who give reasons, admit the offense, but object to the trial or the kind of punishment. 91 children say the punishment was too severe, and the cases cited include many varieties of assault and battery; 34 object to being punished for class offenses; 54 claim that partiality was shown, and 35 claim that in some way the punishment was not according to law. The apology is often condemned as a form of punishment.

The changing view with changing years is not at all marked in this study. With the advance in years there is a decreasing number of those who give no reason, and the older children are more apt than the younger ones to think

that the trial or penalty was wrong. Between the girls and boys there are some differences ; a few more of the girls have had no unjust punishment, and more of them give no reason, or an unintelligible reason, and more of them fall back on the plea of irresponsibility. More of the boys, on the other hand, plead innocence, more declare that their acts were right, or that the trial or penalty was wrong.

An interesting child's bill of rights could be made up from these papers, and it again would be mainly confined to the boys. Hunting, fishing, the circus, going swimming, a certain amount of free time, and freedom to get clothes dirty, many boys consider their inalienable rights. The following from a boy of twelve well illustrates the attitude of many of the papers : " I was ponished for running away and I didn't deserve it, because I wanted to look for a bager that I saw going across the field. I didn't get the bager. The bager run up a hill and when he got on the other side of the hill I lost sight of it and went home and told my mother and she ponished me and I was mad at her."

To sum up this part of the study, then, we should say :

26% of our 2,000 children have had no unjust punishment that they can recall.

24% of those who have had unjust punishments have only a vague feeling about it ; they give no reason.

41% of those who give a reason claim to be innocent of the crime charged.

27% claim irresponsibility.

19% object to their trial or the kind of penalty received.

11% dare to set their own judgment in opposition to that of their judges and declare their acts to have been right.

From a consideration of the offenses charged, the punishments received and the reasons given for considering them just or unjust, I would draw the following general conclusions:

Justice is, with children, largely a matter of feeling ; they feel wronged or justly dealt with without much notion as to why.

The majority of children look upon punishment as an atonement,—they pay for crimes in suffering.

They sometimes demand that they shall be excused when they could not help it or when they didn't know any better.

In a just punishment, children demand : that they shall know the offense with which they are charged, that they shall not be punished for other people's crimes, that others implicated with them shall be treated exactly as they are treated, that no excessive or unusual punishment shall be administered.

On the other hand, they accept: corporal punishment when legally applied, the binding force of a law when duly promulgated, the duty of obedience to constituted authority.

Of course such general conclusions do violence to many of the concrete particulars involved, but they hold for the general sweep of facts, and this study makes no pretence of interpreting individual cases. It simply marks some general outlines.

Many interesting specific questions spring from this study, and we have already gathered the materials for two or three special studies. Among these questions are the following: How far do children consider that a class shall be held responsible for the faults of individuals? How far do children consider it wrong to testify against a companion? If wrong, why is it wrong? For what offenses is corporal punishment allowable? How far, and why do children object to partiality? Would they consider it just to punish part of the culprits if all could not be detected? How far should genuine forgetting hold as a good excuse? How far should weak sense of time be accepted as an excuse? How do boys and girls differ in their attitude toward punishments? If some one else begins a quarrel or fight, does that justify one in carrying it on? In case of conflict of authority, whom should a child obey? What is the highest authority in a child's life? If a child lives up to the letter of the law, does this excuse him from moral responsibility?

# CONTRIBUTION TO THE PSYCHOLOGY AND PEDAGOGY OF FEEBLE-MINDED CHILDREN.

By G. E. JOHNSON, Fellow in Pedagogy, Clark University.

## I.

The Greek word ἴδιος conveyed the idea of isolation or privacy. An ἰδιώτης was a private person as opposed to one engaged in public affairs. The word was used later to designate a humble person, then one uncultured, and finally one unskilled, clumsy. As late as the seventeenth century the English word idiot was used in the sense of a private person. "Humility is a duty in great ones as well as in idiots," wrote Bishop Taylor. But ydiote and fool were terms generally used to indicate either simpletons, or, more commonly, professional fools or buffoons.

Little attention was paid to idiocy by the medical profession before the present century. The first clear definition is given by Esquirol. "Idiocy," he says, "is not a disease, but a condition in which the intellectual faculties are never manifested, or have never been developed sufficiently to enable the idiot to acquire such amount of knowledge as persons of his own age and placed in similar circumstances with himself are capable of receiving. Idiocy commences with life, or at that age which precedes the development of the intellectual and affective faculties, which are from the first what they are doomed to be during the whole period of their existence."[1]

The old English law defines an idiot as one who is *non compos mentis*, or of non-sane memory. In regard to the test of a man's idiocy, it says, "It is sufficient to find him so if he has not any use of reason: as if he cannot count twenty pence; if he has not understanding to tell his age; or who is his father or mother."[2] Blackstone says: "An idiot or a natural born fool is one that hath no understanding from his nativity, and, therefore, is by law presumed never likely to attain any." The property of an idiot came into the custody of the king.

In Europe, all through the middle ages, the idiot was believed to be possessed of an evil spirit or demon. Tradition says that a single hair from the beard of St. Vincent, placed about the neck of the idiot, drove the demon away and restored the idiot to the full possession of his mental powers. In striking contrast was the belief in the east that the imbecile was a sacred being, possessed of something weird, if not divine, in his nature. He was generally the object of kindest care and affection. Among savage peoples the idiot has generally been regarded as one "struck from heaven,"

[1] "Psychological Medicine," Bucknill and Tuke, p. 150. Cited from observations pour servir à l'Histoire de l'Idiotie, dans les Maladies Mentales. Paris, 1828.
[2] Quoted in Dr. Howe's Report. 1848.

and as a consequence has been treated more as a privileged person than an unfortunate. By the Greeks the idiot was left to perish from exposure.

Until the present century, in European countries at least, the lot of the idiot had been a hard one. Deprived of his property by the law, condemned to eternal punishment by the church, abandoned to his fate by the physician, it remained to the student of man to bring the first ray of light and hope to the soul of the idiot. And how came this about?

In very early times it was believed by some that, if a child could be allowed to grow up utterly separate from his fellow beings, he would serve as a living prototype of the primitive man. King Psammetichus, an eastern prince, gave over two children to be nursed by a goat, and to be separated from all human beings, in order to decide which was the most ancient of nations. It is reported that the first word spoken by these children was the Phrygian word for bread. Hence the question was decided in favor of the Phrygians.

"In order to decide, if possible, what was the natural and original language of the human race, James IV sent two infants, under the charge of a dumb woman, to reside at the island of Inchkeith; and that there might be no necessity for intercourse with others, caused them to be provided with all the necessaries which their situation might require, till the children should arrive at maturity." The result of the experiment is not recorded. The writer says: "Some say that they spoke good Hebrew, but as for myself, I know not but by the author's report."[1] A similar experiment is attributed to Frederick II, and also to a Mogul emperor of India. The story of Romulus and Remus was credited by many early historians.

Linnæus studied and compiled the records of ten children who had been isolated from mankind. These wild creatures Linnæus concluded to be a species of the *genus homo sapiens.*[2]

Dr. Seguin makes much of the famous case of Kaspar Hauser. One afternoon in May, 1828, so the story runs, a boy, apparently about sixteen years of age, was met just outside the Neue Thor of Nuremberg. He was short in stature and of fair complexion. His clothes were dusty and travel-stained, and his feet were blistered and bleeding as though from a long walk. He bore a letter directed to "The Captain of the 4th Squadron of the Schmolischer Regiment, Neue Thor Strasse, Nuremberg." He could speak and write his name, and could say: "I will be a trooper as my father was." Great interest was awakened and many conjectures were made as to his past history. It came to be believed that he was born in 1812, and that he had spent all his life in a dark and narrow cell, sitting upon the floor or reclining upon his bed of straw. He had never tasted other food than bread and water, or enjoyed other companions than two wooden horses. At the time of his advent in Nuremberg, his feet were without callouses and were as soft and tender as his useless hands. He would eat no meat. The slightest infusion of alcohol in his drink made him sick. He could see better

---

[1] Ireland, "On Idiocy and Imbecility." London, 1887.

[2] Dr. A. Rauber, professor in Dorpat, published, Leipsic, 1888, a book entitled "*Homo Sapiens Ferus*," in which he had collected the records of the wild persons of Linnæus and others. From these records he draws conclusions regarding primative history, philosophy, politics and pedagogy. He says that the term *homo sapiens* belongs not to man as such, but because of the possibility in him. The primitive man *was* exemplified in these wild creatures. The state is not only the genitor, but the transmitter of culture. Reading and writing came late in the culture of man. He thinks reading and writing are now introduced too early into the school course.

in the dark than in the light. His sense of smell was exceedingly keen, so that he could not bear the scent of flowers. For several days he paid no heed to the ringing of church bells, but after that he began to heed and listen, his eyes following the direction of the sounds. Upon hearing music for the first time he stood fixed in the attitude of a statue, and remained so, as if listening, long after the music had ceased. His delight was in wooden horses, which he decorated with ribbons and spangles, offering them also his bread and water. When one of them received an injury he seemed to feel very sorry for it. Prof. Daumer undertook his education and observation. His dominant intellect became very active. He learned everything taught him.[1] "Screwed into the common form of school education," says Van Damenbach, "his mind suffered, as it were, its second imprisonment." He lost his memory, became peevish, fretful and melancholy, a victim of over-pressure.[2]

Dr. Seguin[3] draws from the history of Kaspar Hauser the following lessons:

1. That idiocy is really isolation, as the Greeks had it.
2. It may be produced artificially.
3. Isolation is so unnatural to man that he will give life to inanimate things and associate his life to theirs sooner than submit to it.
4. It may be aggravated at will by dereliction, and is aggravated by every day of non-treatment.
5. Isolation acts on the hemispheres as well as on the sensorial apparatus.
6. The awakening of the peripheral apparatus awakens the central one.
7. The awakening of backward functions requires great care, lest the organs unused to activity lose their power and be exhausted.
8. What an idiot (born or made up by crime) must first learn for several years, is what baby learned in his first months.
9. Physiological teaching alone can fill up the gap produced by idiocy proper, and years of isolation.

Bonaterre,[4] professor of natural history in the central school of the Department of Aveyron, France, made researches upon each of the ten savages described by Linnæus, and also upon the so-called Savage of Aveyron. This boy, when captured, was entirely naked. He selected his food by smell, drank water sucking it up like an ox, walked on all fours, fought with his teeth, showed little intelligence and had no articulate language. He was fond of caresses, but tore all sorts of garments, and tried constantly to escape. Bonaterre thought the study of this boy would furnish important facts regarding the original constitution of man, and the development of his primitive faculties, provided that the boy was not an idiot. Pinel, Physician-in-Chief to the insane at the Bicêtre, declared the child idiotic. Itard, Physician of the Deaf-mute Institution, asserted that the child was simply untaught. Itard undertook the task of teaching the young savage. He did not believe that idiocy was curable. His object was not to train an idiot, but to "solve the metaphysical

---

[1]Seguin, "On Idiocy," p. 409.

[2]See "Kaspar Hauser," by the Duchess of Cleveland, London, 1893; Seguin "On Idiocy," New York, 1870, p. 407; also "Kaspar Hauser," eine neugeschichtliche Legende von Antonius von der Linde, Weisbaden, 1887. The fact that many accounts in the history of Kaspar Hauser are now discredited does not invalidate the truth of Seguin's conclusions.

[3]"On Idiocy," p. 410.

[4]Seguin, "On Idiocy," p. 17.

problem of determining what might be the degree of intelligence and the nature of the ideas in a lad who, deprived from all education, should have lived entirely separated from the individual of his kind."[1]

His plan was :

"1st. To endear him to social life, by making it more congenial than the one he was now leading, and, above all, more like that he had but recently quitted.

"2d. To awaken his nervous sensibility by the most energetic stimulants, and at other times by quickening the affections of the soul.

"3d. To extend the sphere of his ideas by creating new wants and multiplying his association with surrounding beings.

"4th. To lead him to the use of speech by determining the exercise of imitation under the spur of necessity.

"5th. To exercise, during a certain time, the simple operations of his mind upon his physical wants, and therefrom, to derive the applications of the same to objects of instruction."

Itard did not achieve the results he had expected, and he began to suspect that there were other impediments than mere savagery. Therefore he revised his plan upon the basis of physiology. It was:

"1. The development of the senses."

"2. The development of the intellectual faculties."

"3. The development of the affective functions."

Convinced finally that the savage was an idiot, Itard abandoned his self-imposed task. The French Academy commended Itard for the great progress made in the intelligence of his charge. Itard himself wrote: "You cannot fail to see in the numerous observations I made, a collection of facts capable of enlightening the history of medical philosophy, the study of civilized man, and the direction of certain kinds of private instruction." This was the first attempt to educate an idiot for a philosphical object and by physiological means.[2]

With Itard's "De l'Education d'un l'Aveyron" really began the literature on the treatment of idiocy. This appeared in 1801. To our own country belongs the honor of the first systematic attempt at the education of idiots in a school. In 1818 several idiotic children were received into the American Asylum for the Deaf and Dumb at Hartford, Conn., and an attempt was made to improve their habits and physical condition.

In 1828 Dr. Ferret began an attempt to teach some of the idiots in the hospital at the Bicêtre in Paris. In 1831 Dr. Fabret, at the Saltpetriere, and in 1833 Dr. Voisin at Paris made similar attempts.

In 1837 a young man of twenty-five years began the training of an idiotic boy, with the advice of the celebrated Itard. This young man was Eduard Seguin, born in Clamecy, Department of Nièvre, France, January 20th, 1812. The next year, in company with Esquirol, he opened a private school for idiots. In 1842 Seguin was given the charge of the idiots in the Bicêtre. Meanwhile he published several writings upon idiocy, and in 1846 appeared his "Traitement, Moral Hygiêne et Education des Idiots." This work was the emancipation proclamation for the fettered soul of the idiot. After the Revolution of 1848, Seguin came to the United States, where his love and zeal for the idiot have received honored recognition. In 1866 appeared his English work, "Idiocy and its Treatment by the Physiological Method."

---

[1] Seguin, "On Idiocy," p. 21.

[2] Seguin, "On Idiocy."

In 1842 Dr. Gugenbühl established a school for cretins at Abdenburg, Switzerland. As to the success of Dr. Gugenbühl's work, there is a difference of opinion. He claimed marked improvement in his wards, and certainly his efforts and work had much to do toward advancing the interest in the education of idiots.

In 1846 Miss White founded the first training school for idiots in England, at Bath. In the same year Dr. F. P. Backus of New York and Judge Byington of Massachusetts brought to the notice of the Legislatures of their respective states the need of public institutions for the training of idiots. During the following twenty years, there were opened in the European countries, Canada, Australia, and the United States no less than eighty public and private schools for idiots. On page 292 will be found a list of the schools at the present time.

Having thus briefly sketched how and for what purpose the training of idiots began, and also the progress of institutions, let us add some of the representative views regarding the causes and classification of idiocy.

## Causes of Idiocy.

Heredity plays a prominent part in the production of idiocy. There are instances of whole families of idiots. Bucknill and Tuke[1] give a portrait of five brothers and two sisters, all idiots. Dr. Howe[2] mentioned a town in which the authorities hired a male idiot to marry a female pauper idiot. From this marriage resulted three idiotic children, and in consequence of its wise act the town was obliged for many years to support the whole family. Ireland quotes Haller as saying that he knew two noble women who got husbands on account of their fortunes, although they were almost idiots. Their mental defects spread through several families for a century, so that some of their descendants were idiots even in the fourth and fifth generations.

In the examination of two thousand cases, Dr. Down[3] found that in 45% there had been neuroses in the family of one or both parents. In the Canton of Berne, in 1873, 55% of the idiots were found to have hereditary neurotic tendency.

There is no doubt that consanguinity of marriage has its influence upon the production of idiocy. But the tendency has been to overestimate its importance.

There is much difference of opinion in regard to the influence of drunkenness in causing idiocy. Down and Dahl lay considerable stress upon the part intemperance has to play. Dr. Shuttleworth and Ireland think drunkenness does not play a great part directly. Indirectly, through lowering the physical and moral health, it may be of considerable importance.

The over-burdening of women, according to Seguin, is a prolific cause of feeble-mindedness. Wives becoming anxious and worried over the business affairs of their husbands, carry too heavy burdens to fulfill the function of motherhood. These are the over-faithful wives. There is another class which Seguin describes as follows: "Their education — a jumble of that which has made all the male inutilities we have known—has not taught them an iota of womanhood. Their hygiene and habits have disqualified them for motherly functions. City and house narrownesses do not offer more room

[1] Psych. Med., p. 161.
[2] "Causes of Idiocy." Edinburgh, 1858.
[3] Op. cit., pp. 16-18.

for a new-comer than their slender pelves ; their tastes run toward niceties incompatible with married life ; fecundation is the result of maladroitness ; its product unwelcome, ill-fed, ill-treated, before as after birth, conceived in apprehension, remains a nervous ruin, or disappears in a storm of some sort. At this spectacle we can sorrow, but not wonder. Can we expect woman to know what she has not learned, or to resent feelings whose warmth never descend into herself? How, besides, can she conceive and nurture with a living enthusiasm a child she has no strength to carry, no room to grow, no substance to feed, no idea how it is to be handled, cared for, etc.? The heaviest task when it is not the dearest, she shifts it off, coming out of the struggle with a sad countenance and emaciations foreboding early degeneracy of some vital organ. To be frank, we physicians, teachers and parents are more culpable than herself."[1]

Fright, sorrow, deep anxiety of the mother during pregnancy are often cited as the causes of idiocy. It is probable that emotional disturbance is often the only apparent cause when there is some other hidden but more powerful influence, such as hereditary tendency. Still there is no proof that a sudden shock to the mother may not powerfully and permanently affect the fœtus, while on the other hand many stories seem to confirm the belief that it does. Ireland says : "In all ages women have believed that fright or extreme distress is dangerous to their offspring, and I see no reason for denying that such influences, during pregnancy, may in many cases produce idiocy in the child of healthy parents who would otherwise have been born free from mental deficiency. One woman lost her husband at sea ; another got a fright from a horse running away with a coach in which she was ; and another was terrified by the riotous behavior of drunken sailors in a prison, her husband being the jailer,"[2] and so on.

Women are often needlessly apprehensive and anxious. Common sense and the kindly assurance of a physician will do much to relieve both the anxiety and the effects of the incident which produced it.

The following statistics on the causes of idiocy compiled by Hermann Piper are instructive and interesting :[3]

In 1,287 cases, of which 860 were congenital, 427 acquired, the following conditions were found :

In the congenital cases. *1.* Neuroses in 160 cases (18%). a. In the parents, 96 cases (60%). b. In the grandparents, 17 cases (10%). c. In the near relatives, 47 cases (29%).

*2.* Drunkenness in 82 cases (9%). a. In the father, 77 cases (94%). b. In the mother, 5 cases (6%).

*3.* Blood relationship of parents in 43 cases (5%).

*4.* Additional condition of frequent sickness of the mother during pregnancy, 55 cases (6%). a. Grief, 3 cases (5%). b. Overwork, 3 cases (3%). c. Emotional disturbance, 10 cases (18%). d. Fall, 2 cases (3%). e. Fright, 2 cases (3%). f. Nervousness, 6 cases (11%). g. Previous abortion, 3 cases (5%). h. Premature birth, 7 cases (13%). i. Twin birth, 2 cases (3%).

In 352 cases of acquired idiocy, the following were found as causes :

1. Meningitis, 78 cases (22%). 2. Convulsions at teething, 77 cases (22%). 3. Convulsions, 58 cases (16%). 4. Fall and blow on

[1] "New Facts and Remarks concerning Idiocy." New York, 1870, p. 27.
[2] "On Idiocy and Imbecility," p. 32.
[3] "Zur Ætiologie der Idiotie," von Hermann Piper. Berlin, 1893.

head, 39 cases (11%). 5. Neglected training, 24 cases (7%). 6. Rickets, 16 cases (4%). 7. Measles, 9 cases (2%). 8. Scrofula, 8 cases (2%). 9. Worms, 8 cases (2%). 10. Small-pox, 7 cases (2%). 11. Insanity, 7 cases (2%). 12. Typhus, 6 cases (2%). 13. Brandy drinking, 3 cases (1%). 14. Onanism, 3 cases (1%). 15. Injury at birth, 2 cases (1%). 16. Ill-usage, 2 cases (1%). 17. Perverted training, 5 cases (2%).

Of 286 cases of acquired idiocy the defect became apparent:

In the first year in 86 or 30%. In the second year in 70 or 24%. In the third year in 30 or 10%. In the fourth year in 30 or 10%. In the fifth year in 19 or 6%. In the sixth year in 20 or 7%. In the seventh year in 6 or 2%. In the eighth year in 4 or 1%. In the ninth year in 2 or 1%. In the tenth year in 6 or 2%. In the eleventh year in 1 or 1%. In the twelvth year in 2 or 1%. In the fourteenth year in 3 or 1%. In the seventeenth year in 2 or 1%. In the eighteenth year in 3 or 2%. In the twenty-fifth year in 1 or 1%. In the forty-third year in 1 or 1%.

The high percentages in the first and second years will be noticed, and the quick falling off after the sixth year.

Of 916 cases idiocy occurred in the first born in 329 or 35%. In the second born in 154 or 16%. In the third born in 166 or 18%. In the fourth born in 101 or 11%. In the fifth born in 54 or 6%. In the sixth born in 38 or 4%. In the seventh born in 28 or 3%. In the eighth born in 17 or 2%. In the ninth born in 14 or 1%. In the tenth born in 5 or ½%. In the eleventh born in 5 or ½%. In the twelfth born in 5 or ½%.

Dr. Shuttleworth and Dr. Fletcher Beach discriminated eight main causes in their examination of 2,380 cases of idiocy. They give the following:

1. Phthisical family history, 28.31%. 2. Insane imbecile or neurotic taint, including epilepsy, 41.38. 3. Consanguineous marriage of parents or grand parents, 4.20. 4. Parental intemperance, 16.38 5. Abnormal conditions of mother during pregnancy, 29.87. 6. Difficulties or accidents of birth, (about) 43.00. 7. Injuries to head in infancy, 6. 8. Febrile illness in infancy, 6. 9. Infantile convulsions, 27.39. 10. Epilepsy and cerebral affections, 8.11.[1]

F. H. Wines reports on the causes of idiocy the following statistics:[2]

*Aggregate of Cases.* General Diseases, 13,295; Fever, general, 1,087; Scarlet Fever, 1,263; Diphtheria, 42; Syphilis, 12; Scrofula, 78; Rickets, 72; Anæmia, 5; Total, 2,559.

*Diseases of the Nervous System.* Epilepsy, 2,490; Meningitis, 552; Paralysis, 415; Catalepsy, 5; Chorea, 63; Inflammation of Brain, etc., 584; Abscess on Head, 41; Hydrocephalus, 235; Convulsions, 1,978; Spinal Affections, not specified, 154; Brain Troubles, not specified, 57; Total, 6,574.

*Diseases of the Reproductive System.* Phimosis, 2; Menstrual Disorders, 12; Total, 14.

*Accidents.* Falls, Blows on Head, on Spine, etc., 1,589; Injuries at Birth, 11; Sunstroke or Exposure to Sun, 84; Stroke of Lightning, 19; Exposure, Maltreatment, Overwork, etc., 118; Fright, 360; Burns, 97; Miscellaneous, 1,870; Total 2,278.

Of 63,132 idiots, 46,874 were congenital. The mental defects of the rest were manifest in

1,576 under 1 year 1,253 at 5 years 1,091 at 10 years

[1] Quoted in "The Feeble-Minded Child and Adult." London, 1893.

[2] House Miscellaneous Documents, Second Session Forty-Seventh Congress, 1882–83, Vol. XIII, Part 21.

| | | |
|---|---|---|
| 1,924 at 1 year | 887 at 6 years | 352 at 11 years |
| 2,626 " 2 years, | 753 " 7 " | 941 " 12 " |
| 1,727 " 3 " | 791 " 8 " | 234 " 13 " |
| 1,297 " 4 " | 397 " 9 " | 409 " 14 " |

Dr. Wilwarth ascribes fifty per cent. of feeble-mindedness to actual disease.[1]

Physiologically, according to Seguin,[2] idiocy is produced by deficiency of nutrition in utero and in neo-nati. It incapacitates mostly the functions which give rise to the reflex, instinctive, and conscious phenomena of life. The *modus operandi* of deficiency of nutrition, he says, is not known. At the time that the deficiency of nutrition takes place, it stops the fœtal process and gives permanency to the transitory type through which the fœtus was passing. Hence, the heart may sometimes be nearly homologous to the heart of fishes, or the convolutions of the brain may be unfinished, as in the ourang-outang or the calf. This deficiency of nutrition happens in two ways, slowly, as from depressing influences, or at once, as from a shock. Ireland[3] says idiocy depends "upon malnutrition or diseases of the nervous centres occurring either before birth or before the evolution of the mental faculties in the childhood." Idiocy, then, is the condition of arrested development.

As to the pathology, Seguin says idiots are not so much ill-shaped as ill-proportioned. The brain substance in profound idiocy is generally softer and paler, with less distinction between the white and gray matter. The convolutions are shallower and fewer in number. The size and shape of the skull are no criterion of the shape of the brain, nor of intelligence. Harmony is more significant than size or shape. Hence any deviation from the Caucasian type, in harmony of proportions in our children, is indicative of some anomaly in their faculties. In the idiot just born there is little to indicate idiocy, unless it be the often monstrous shape of the head. But after a few months there are many indications: the head rolls, the eyes are glassy or fixed, there is the difficulty in swallowing, absence of voice, flaccidity of the legs, profuse saliva, imperfect sensations, and the like.

The functions of organic life are generally below the normal standard. Respiration is shallow, pulse feeble, appetite abnormal. There is inability to walk, and general muscular infirmities, causing disordered movements.

### Classes of Idiots.

Esquirol[4] classified idiots according to their powers of speech. The first class uses short phrases or only words; the second articulates monosyllables or only cries; the third utters no phrases nor words nor monosyllables. Esquirol also made two general divisions, idiocy and imbecility.

Hoffbauer divided imbecility into three classes, according to intelligence, basing it upon the power to form judgments.

Dr. Seguin made the first physiological classification. He divided idiocy into two classes:

1st. Profound idiocy, in which there is some abnormality in the central nerve organs.

---

[1]Report International Congress of Charities Correction and Philanthropy. Chicago, June, 1893.

[2]"On Idiocy," p. 39-47.

[3]"On Idiocy and Imbecility," p. 1.

[4]Bucknill and Tuke, Psych. Med., p. 151.

2d. Superficial idiocy, in which the peripheral termini alone are affected.

Duncan and Millard[1] divide into eight classes:

Congenital idiots.

Class 1. True and profound idiots; solitaires.

Class 2. Having slight intelligence, being able to stand and walk a little, and often capable of slight instruction.

Class 3. Able to walk, to run, to use their fingers, to be made to attend slightly, to be able to do easy mechanical work, and to feed themselves; memory and perception very weak and variable in power.

Class 4. Feeble-minded children, adolescents and adults.

Non-congenital.

Class 5. Born with perfect intelligence as with normal children, but having suffered by some disease of the brain, epileptic convulsion, by water on the brain, or by injury to the head.

Class 6. Resembling Class 5. But the evidence of permanent disease of the brain exists in the form of epileptic seizures and paralysis.

Imbeciles.

Class 7. Cases born with hydrocephalus, or in which the disease has been arrested after it has destroyed, more or less, the power of the brain.

Class 8. Cases of perfect individuals who have been educated and who have become debased in mind and body during early youth, from vice.

Dr. Down makes an ethnological classification of idiots.[2] He cites a negroid family, with characteristic malar bones, prominent eyes, puffy lips, retreating chin, woolly hair, although not black skin. There is the Malay type, with soft, black curly hair, prominent upper jaws and capacious mouths, like the nations of the South Sea Islands. There are a few instances of the North American type. The Mongolian type, says Dr. Down, includes more than ten per cent. of feeble-minded children. The children of this type, when not at all related, resemble each other remarkably. Dr. Down thinks this ethnic classification gives strong evidence that the different ethnic families of men are not distinct species. Besides these strong physical characteristics are peculiar mental and moral traits characteristic of the several classes.

Dr. Ireland classifies as follows:[3] 1, Genetous Idiocy; 2, Microcephalic Idiocy; 3, Eclampsic Idiocy; 4, Epileptic Idiocy; 5, Hydrocephalic Idiocy; 6, Paralytic Idiocy; 7, Cretinism; 8, Traumatic Idiocy; 9, Inflammatory Idiocy; 10, Idiocy by Deprivation.

I. *Genetous Idiocy.* Idiots of this class are generally dwarfish and deformed, especially as to palate, teeth, finger nails, hands and feet, ears and eyes. Presumption of hereditary cause is great, inasmuch as the lesion has occurred previous to birth. The majority of these cases die of consumption. The circulation is feeble, the hands and feet are cold, sensibility is deficient, and sores are slow in healing. They sometimes sit in strange postures, and bad cases have automatic motions.

II. *Microcephalic Idiocy.* All heads which are below seventeen inches in circumference may be considered microcephalic. The

---

[1] "A Manual for the Classification, Training and Education of the Feeble-Minded, Imbecile and Idiotic." London, 1866.

[2] Wood's "Medical and Surgical Monographs." Vol. X.

[3] "On Idiocy and Imbecility."

relation of the size of the brain to intelligence has always been a puzzling question. Seguin says that Esquirol, Pritchard, and Foville, after thirty years of measuring and weighing the heads of idiots, concluded:[1]

1. No constant relation exists between the general development of the cranium and the degree of the intelligence.
2. The dimensions of the interior part of the cranium, and especially of the forehead, are at least as great among idiots as among others.
3. Three-fifths of idiots have larger heads than men of ordinary intelligence.
4. There is no constant relation between the degree of the intelligence and weight of the brain.
5. The different degrees of idiocy are not measurable by the weight of the brain.
6. A cranium, perfectly formed, often encloses a brain imperfectly formed, irregular, etc.
7. Sometimes the brain of idiots presents no deviation in form, color and density from the normal standard. It is, in fact, perfectly normal.

However, Voisin says that the proper exercise of the intellectual powers is impossible with a head of from 11 to 13 inches in circumference. Heads of 18 to 18½ inches allow of regular exercise of the intellectual faculties. The heads of the famous Aztecs measured respectively 4½ inches in the antero-posterior diameter by 4 inches in the transverse diameter for the boy, and 4⅛ inches by 3¾ inches for the girl. Children of this class are generally small of stature, even dwarfish.

III. *Eclampsic Idiocy.* Eclampsic idiocy differs from epileptic idiocy in that in the former the convulsions occur in early infancy, generally during teething. These are frequent while they last, but soon cease, allowing the child to recover health. In epileptic idiocy, the fits occur at more distant intervals, but seldom fully disappear. Dr. Ireland thinks that the most common lesions in this class of idiocy are adhesions of the membranes, some wasting of the gyri, especially of the frontal region, and a hardening of the tissue, with fewer vascular spots.

IV. *Epileptic Idiocy.* Idiocy caused by epilepsy is common. This may result from the *petit* as well as the *grand mal.* Yet epilepsy may result in no intellectual impairment. Dr. Russell Reynolds found this true in thirty-eight per cent. of his cases, and in one case there were as many as 1,100 attacks in a year, continuing for seventeen years, without mental failure.

The essential lesson of epilepsy is in the medulla. Many of this class have excellent general health, good appetite, and great strength, and are susceptible of much improvement by training.

V. *Hydrocephalic Idiocy.* Hydrocephalus must not be confounded with hypertrophy of the brain. Both cause enlargement of the skull. Idiots of this class are usually of feeble constitution, but are often more curable than other classes. They are gentle, trusting in disposition as a rule, and are very awkward in their movements.

VI. *Paralytic Idiocy.* These cases are more susceptible of mental improvement than physical. Brain lesions, causing paralysis, may take place before birth. Dr. Schroeder von der Kolk cites cases where one-half of the brain being atrophied, there was still normal use of the faculties. The mental power of these cases

[1]Report of the Commissioners on Idiocy to the General Assembly of Connecticut. New York, 1856.

depends very largely upon the healthy condition of one hemisphere.

VII. *Cretinism.*[1] Cretinism is a form of idiocy in which the arrested development of the nervous system is caused by the condition of the soil, climate, air, water, etc. It is most common among the Alps. The derivation of the word cretinism is not known. It was thought by Esquirol to be from *cretine*, alluvial soil. Cretinism differs from idiocy in several respects. At birth the cretin may appear free from disease, and, indeed, where predisposition is present, may, under favorable circumstances, entirely escape. Cretinism is endemic. It is more curable than idiocy. In cretinism, both the muscular and the nervous systems are affected in a greater degree than in idiocy. Cretinism is commonly accompanied by goitre.

VIII. *Traumatic Idiocy.* Traumatic idiocy, due to injuries of the head, should be distinguished from inflammatory idiocy; for although a contusion of the head may result in inflammation, it may be small in comparison to the actual injury done the brain, and the inflammation will be centered about this injury and less diffused.

A custom of bandaging the head of infants has been practiced by many peoples. Great deformities have often resulted from this custom without lessening the intelligence, it has been asserted. M. Broca mentions that this has commonly occurred in the neighborhood of Toulouse, France. There are many instances among the North American Indians, and the Peruvians are noteworthy in this respect.

IX. *Inflammatory Idiocy.* These cases are caused by inflammation of the brain not due to external injury. Idiocy ascribed by parents to fever in childhood, may be due to other causes, especially where there are marks of genetous idiocy, such as vaulted palate and other defects of the mouth.

X. *Idiocy by Deprivation.* In this class Dr. Ireland places such cases as Laura Bridgman, Oliver Caswell, Meystre and Kaspar Hauser. It is that condition of the mind in which a child who has been deprived of two or more of its principal senses remains, if instructed.

Voisin divides idiocy into four classes, as follows:[2]

1. Complete, absolute idiocy, congenital or acquired. Incurable. Comprises two grades. In the first are the acephalic and those without sense of self-preservation. In the socond grade are all those who have the instinct of preservation and fixed habitude.

2. Incomplete idiocy, congenital or acquired. Susceptible of some improvement. This class comprises several grades, according to the existence or absence of certain intellectual senses and motor faculties.

3. The imbecile, congenital or acquired, characterized by the existence of all the intellectual, instinctive and moral faculties, and by the perversion and instability of these faculties.

4. The mentally weak, characterized by the feebleness or by the lack of balance of the faculties.

Sollier[3] classifies according to the attention as follows:

1. Absolute idiocy. Complete absence and impossibility of attention.

2. Simple idiocy. Attention feeble and difficult.

3. Imbecility. Instability of attention.

---

[1] Psych. Med.
[2] "L'Idiotie." Paris, 1893.
[3] "Psychologie de l'Idiot et l'Imbecile." Paris, 1891.

The bases upon which the foregoing classifications have been made differ widely. The appropriateness of each depends upon the use to be made of it. Thus, one is for the physician, another for the psychologist, while a third is for the educator.

## The Education of Idiots.

In writing a chapter upon the training of idiots, one can do no better thing for the general reader or teacher than to review carefully Seguin's Physiological Method.

To Jacob Rodrigues Pereire, Dr. Seguin attributes the prominent place in the early development of the physiological method. Pereire taught congenital deaf mutes to speak, not only with a natural voice and a correct pronunciation, but even to reproduce his own peculiar southern accent. This was done by causing the deaf to perceive the vibration accompanying a given sound and to reproduce it. He practically made his pupils hear through the skin, and thereby demonstrated that all the senses are modifications of the sense of touch.

From Pereire's experiments resulted the following important conclusions :

"1st. That the senses, and each one in particular, can be submitted to physiological training by which their primordial capability may be indefinitely intellectualized.

"2nd. That one sense may be substituted for another as a means of comprehension and intellectual culture.

"3d. That the physiological exercise of a sense corroborates the action as well as verifies the acquisitions of another.

"4th. That our most abstract ideas are comparisons and generalizations by the mind of what we have perceived through our senses.

"5th. That educating the modes of perception is to prepare pabulum for the mind proper.

"6th. That sensations are intellectual functions performed through external apparatus, as much as reasoning, imagination, etc., through more internal organs."

Rousseau often visited the school of Pereire and, according to Dr. Seguin, the Emile is full of experiments upon physiological teaching, which could have originated only in the school for deaf mutes. He says : "The first school where deaf mutes were taught to speak naturally and the first treatise on education whose object was to create, not a subject, but a man, stand side by side as the two indices on the road of modern education." It was after these two that Itard conceived the terms of his second plan for the training of his savage pupil. If Itard "did not conceive a philosophical method of education, he expressed and realized the first views on this subject, generalizing on his savage idiot the sensorial experiments made by Pereire on the touch of deaf mutes ; and specializing on the same folorn pupil the theories enunciated by Rousseau for the education of mankind. Others have continued his task, even enlarged, completed and systematized it, but we do not know of any one who would not gladly exchange all subsequent titles for the authorship of the Savage of the Aveyron."

Dr. Seguin's book of 1846 had closed with these words : "If it were possible that in endeavoring to solve the simple question of the education of idiots, we had found terms precise enough, that it were only necessary to generalize them to obtain a formula applicable to universal education, then, not only would we in our humble sphere have rendered some little service, but we would besides have prepared the elements for a method of physiological

education for mankind. Nothing would remain but to write it." Twenty years afterwards Herbert Spencer alone, having advocated the application of these methods to ordinary schools and children, and no *ex-professo* having been written, Dr. Seguin takes upon himself the task of the present work.

According to the physiological method, "education is the *ensemble* of the means of developing harmoniously and effectively the moral, intellectual and physical capacities as functions." It adapts the principles of physiology, through physiological means and instruments to the development of the motor, perceptive, reflective and spontaneous functions. This method is first applied in removing as far as possible the causes of idiocy, and when that has not been done, by noting the very first systems of idiocy in the infant and beginning its treatment immediately. Education must follow the great natural law of action and repose. Each function must be called in turn to activity and rest, the activity of one aiding the repose of another, contrast being not only an instrument of relaxation, but of comprehension also. Above all, individuality must be respected. The general education embraces all that pertains to movement, prehension, manipulation, palpation, imitation and communication through language, signs, symbols. From imitation is derived drawing, from drawing writing, from writing reading. Reading implies the most extended use of the voice in speaking, music, etc. Each sense is trained to be perfect in itself, and also to take the place of another. Both sides of the body are trained alike. After the natural senses are developed as far as possible, the instruments of artificial senses are to be brought into use ; by handling, the microscope, compass, prism and others must be made familiar to all children, who shall see nature through itself, not through the twenty-six letters of the alphabet.

*General Directions.*—The child must be well fed. Each day's work must begin like a pleasure, with walks, sports or music. The exercise requiring the greatest attention, must come at the first period of study. During the later hours more is to be derived from excitement. Each new object must be taught as a corollary to what has been previously learned. Watch for the first signs of fatigue. One of the first duties is to correct the automatic motions. Do not confine to automatic memory what can be learned by comparison; teach a thing with its natural correlations and generalizations. Use contrasts, sometimes similarity. Teach dissimilar things in apposition. Use repetition, rhythm. Alternate exercises in analysis with one in synthesis, individual with group teaching. Never do indoors what can be done without. Create gaiety and mirth,—happiness is as much an object as progress. Begin with each child where natural progress stopped ; so many children, so many beginnings.

*Training of Movement.* Automatic, mechanical and spasmodic movements must be corrected. There are two kinds of immobility—negative and positive : negative immobility, when the child has not will-power to make the desire voluntary movements ; positive, when he has the will-power to check involuntary movements. After positive immobility has been acquired, the child must be taught to walk. If utterly helpless, he is held and pushed along, his legs are made to yield to the elasticity of a baby-jumper, to encounter with regularity a spring-board. The muscles are kneaded, articulations handled. The child is placed upon blocks of the size of the feet and made to stand, or the blocks are of different height and the child walks down them as down the stairs. (The education of the hands and arms is begun at this point.) Now come into

use the horizontal ladder, steps, rough places, stony, slippery, and the like. Footprints are made upon the floor, near or far apart, to be followed. The child does all these things not yet from his own impulse. How the child rises from the negative or collapsed will to the synergic will is shown in the chapter on moral education. Greatest attention is paid even to the minutest details of locomotion; for steadiness of foot is the basis of steadiness of body and hand. The first want of a people and an individual is muscular strength.

*The Hand.* The anomalies of the idiot's hand are universal. Too short, spindle, flabby, stiff, cold, bloodless, saliva soaked, its incapacity is the barrier to all the idiot is to acquire. The hand must first learn to take hold, keep hold, and let go. The child is put behind an inclined ladder. His hands are placed within the teacher's hands and are made to clasp a round. If he lets go he falls. Seguin's system of consequences and rewards is wonderfully ingenious and happy. For example, suppose the child's hands are hot and chafed with his first exercise of grasping the ladder. He is told to hold out his hands, and to his surprise a smooth-skinned, cool, rosy apple is placed in each. Delighted, the child makes his first voluntary attempt to grasp and hold.

After the ladder come the balancing pole, glass, pen, spade, bricks and the like. Prehension, the more physical, first; handling, the more intellectual, later. The special gymnastic apparatus includes the backboard, the swing with spring-board, bricks, balancing pole, blocks like dominoes, pins, beads, pasteboard patterns, coins, cards, thread for winding, musical mechanisms, apparatus for buttoning, lacing, etc. However, the best things are drawn from the material of common life.

*Imitation.* "Imitation is the power, resulting from reflex spontaneity, of repeating after others acts which we should not or could not have done of ourselves. It furnishes a motive to the million activities which have none primarily." It is never commenced too early nor extended too far in its physiological applications. The child is taught to imitate first the full body movements, then movements of parts, as of arm, hand, leg; then of special organs, as eyes, lips, fingers, thumbs, etc. These movements, at first simply serial, soon give way to the unexpected call into action of any organ that can be moved by the will. Induced at first in silence and the isolation of closet and the monotony of circumstances, it is later carried to the open room and the contagion of groups. Now begins an endless round of movements, gestures, attitudes, slow at first, but increasing in rapidity and interest until teacher and pupil seem the circuit of a current of sympathy and perfect understanding. Not a word is spoken, but the sight has been improved, movements quickened, perception extended, understanding increased, all parts of the body brought under ready control of the will. Above all, the dead hand is educated to living work.

*Education of the Senses.* We must first find the seat of difficulty, whether in the peripheral organs, the ganglia or the hemispheres. One principle must guide the training of touch as in the training of all the senses, viz., that each function is virtually identical with its faculty, *i. e.*, each function is psycho-physiological. Hence, each sense must be taught both as a function and as a faculty. For instance, the fingers must be trained not only to be quick to receive impressions from objects, but also to discriminate accurately their qualities.

After the preliminary and imitative exercises, come a new set of three kinds of experiments: one to cultivate perception, one to

transmit it, and one to give knowledge of it. The peripheric termini of the nerves may be hyperæsthesic or anæsthesic, the centripetal nerves may be slow in action, or the sensorial ganglia may be deficient in sensibility. In the first instance, the termini must be covered with stronger epithelium; in the second, rough substances must be used, the hand titillated with feathers, etc.; in the third the balancing pole comes into play, and in the fourth we must depend upon hygiene and medicine.

*Taste and Smell.* Special "sensorial gymnastics" are devised in smelling and tasting.

*Audition.* A child may be deaf through defect of auditory apparatus or lack of intelligence. The functions of the sense of hearing are hearing, auditing, listening and repelling. Sounds are noises, music or speech, which speak respectively to the wants, the motive powers and to the intellect. Music excites many impulses in idiots even when it has no special meaning to them. The music must be striking, the tunes corresponding to the natural disposition of the children, modified by temperature, atmosphere, snow, rain, etc. It serves in one case as a sedative to muscular exertions and aid to concentration of mind; in another by expressing mirth or muscular vigor, to incite desire of play and exercise. The intellectually deaf are first placed with chest against the piano when it gives forth its strongest vibrations, while the other children are singing. Then comes a profound silence, followed again by vibrations. In the isolation of a dark room, music is made to pierce the blank organ of the child. Thus far, the child has learned to hear. Auditing is developed by giving continuity to the tunes as if they were discoveries. Listening is created by breaking the continuity of the tune at its most interesting point. This leaves the ear of the child listening as though thirsting for more.

*Teaching Speech.* The physiological defects of the organs of speech must be removed. Suppose a child is to receive its first lesson in articulation. He is made to resume his exercise of imitation. This is extended to movements of all parts of the face, the lips, the tongue. As the faces draw nearer and nearer, the teacher's lips suddenly become parted as if by chance with the emission of the sound of "pa" or "ma". Inertia has broken the barrier for the child and he has used his voice. As soon as syllables can be pronounced, music is employed in the speaking exercises to carry along the voice.

*The Sight.* Sight is the most intellectual of the senses and the most connected with intellectual disorders in idiocy. It is the most difficult to train. If there is one thing which can penetrate the glassy eye of an idiot, it is our own look. "The best way of fixing the regard is the regard," Seguin phrases it. The dark room is useful. Here flashes of light, fireworks, a mammoth kaleidoscope, and combinations of colors attract the vacant look. Next the balancing pole. As soon as the attention of the eye is secured, it is directed to serve an educational purpose. Colors are taught in a dark room with colored window panes and then by all sorts of colored objects. Form is taught by blocks, size by measurement of sticks, distance by actual experiments. Of forms the most difficult to acquire is the plane. Planes are made in the sand with the hand, roller, spoon, spade, etc. By imitation, the child places wafers on a circumscribed plane, making the center, corners, etc. The child models in wax, clay, or putty, squares, rounds, triangles or familiar objects. With a knife the child whittles a stick to a certain mark, then copies a form. After the

knife come the chisel, hatchet, saw and hammer. Scissors are a favorite instrument. Now we can put a pencil into the hand of the pupil with confidence. He traces lines upon the blackboard, horizontal or vertical, then slanting. These lines gradually become joined into plane figures; now curves are traced, and these finally are blended into solid figures.

Letters are drawn before they are read. Two alphabets are used, one solid, the other printed. The child matches solid letters upon the printed ones. This is passive reading. Active reading begins with the use of cards, upon which are printed monosyllabic words. These are read after the manner of the word method. Objects and acts must accompany the reading lesson. There is great danger here of the abuse of object lessons. "The object lesson derives its most important advantages from its degree of idealization. In the hands of a teacher who feels nothing but matter, it is a lowering instrument."

Number work is most difficult to an idiot. Number is always taught in connection with objects.

*Memory and Imagination.* At first memory is trained only through the general training of the senses. We now bring the attention of the child to a class of facts or feelings in three circumstances—when they take place, after they are accomplished, and when they are to be presented again. What he likes to eat, what he likes best to do, and by contrast, what he dreads most, furnish pabulum for recollection. The mind is habituated to remember not for memory's sake, but for some end to be accomplished. Just as the congenitally blind have no visual images and the deaf no auditory images, so the idiot has no images or ideas without previous perception. The rapid growth in idiots of aspirations after what is beautiful, right, and worth having, proves that idiots can acquire imagination under the physiological education. It is imagination which teaches them to try to please, seeing their faces lighted with hope and faith at their progress, or even the low idiot to share his cake with another and to look intensely not at his mouth, but at his eye, to see in it the gleam of pleasure.

*Moral Education.* We have already seen how the moral is blended with the physiological training. To describe the moral training in all its parts would be writing the book over again. Its abstract principles are briefly set forth.

Severity is cruelty. There should be no punishment unless the understanding of the wrong preceded the commission. Recompenses may be given. Caresses are a great power for good or for evil. The time and place of each command must be opportune. Idiots are helped by opposing the vivacious to the immobile, the imitative to the careless, the affectionate to the indifferent, etc. A child who teaches another teaches himself more by the reflex action of his will. The lineaments of the face, the attitude of the body, the expression of the eyes, the gestures, may enforce or defeat a command. The expression of the voice is of the greatest importance. Coercion is sometimes necessary and should then be used. Seguin quotes Leuret: "Physical pain serves the insane and idiots as other men as a means of education; it is one of the motives which lead us to avoid the wrong and search for the right; but it is not always necessary." Our commands at first must be those which we can make the child obey. We will not order him to open his mouth,—how can we make him? But we will order him not to scratch his face while we employ his hands at a distance. We will

give negative forms of command which leave no room for disobedience, letting circumstances themselves enforce the law. Gradually we will introduce surreptitiously others of a more arbitrary nature, to which he submits himself without noticing the difference. Commands are alleviated by variety. When the rotary system takes the children from occupation to pleasure, lesson, exercise, labor, excitement, the forms of command must vary to meet indifference, antipathy, resistance, which may be successively provoked.

Seguin has been résuméd thus at length, and followed so largely verbatim because his book is still the classic of all literature upon idiocy. It is the first book upon this subject to be read, whether by the superintendent and teacher in the institution for the feeble-minded, the public school teacher, the parent, the sociologist, or any one interested in this unfortunate class. The spirit of Dr. Seguin's work upon idiocy is inspiring. His patience, his enthusiasm, his deep insight into the very soul of the idiot and his devotion, can but deeply impress every reader.

Other writers, notably Ireland, Duncan and Millard, have given valuable directions for the training of idiots in the institution and in the home.

Dr. Ireland's views upon the education of idiots are briefly summed up as follows :

Treatment should be both mental and physical.

Teaching must commence with simple exercises.

The best time for beginning the training of an idiotic child is at about seven years of age.

The associating together of idiots is not harmful, but on the contrary helpful.

Dr. Ireland doubts that Dr. Seguin did not sometimes mistake the results of his training of low grade idiots.

Speech is generally, though not always, commensurate with intellectual ability. In teaching speech facial gymnastics are of no great importance, for all the muscles used in speech, he says, can be exercised at meal times. The words most easily taught at first are the nasal sounds, like "me" and "no," and the explosive consonants like p and b. Yet there are many exceptions. Vowels alone are easiest to teach at first. The best way is to teach one vowel and then the sounds which are homologous. The method of overcoming deficiencies depends upon the individual disposition and malformations of the organs of speech. It is of little use to try to educate those who make no voluntary sounds.

Ireland's method of training the senses is essentially like that of Seguin's.

In teaching to read, Ireland would have a child learn to recognize syllables before letters.

Manual training is very important, but it is most difficult to frame general precepts.

The time of puberty is of great danger and the child must be carefully guarded. Above all things, imbeciles must be taught to work. Many imbeciles become self-supporting, but all need the influence of "favorable protection."

Some of the points made by Duncan and Millard are the following :

Ordinary education and teaching are impossible with the idiot. They need even more forbearance, kindness, gentleness and attention than normal children. The primary training of the body is of greatest importance. There must be utmost regularity and perseverance in diet, exercise and habits. The mind must wait upon the body, and there should be clock-work regularity in all matters

pertaining to health. Neglect in case of idiocy is worse than in normal children, therefore, from the day that idiocy is discovered, extra care and attention should be given. It is of importance to separate the different classes in education. The teacher should aim first to win the affection of the child; in this way obedience is best secured.

Utility should guide in the choice of things taught; especially should the perception and imitation of the child receive attention. There should be no idleness. It is useless to try to cram the memory of these children, and there is no profit in scolding and cuffing.

During the first few years great attention, especially in the habits of cleanliness, must be paid by the nurse to a child of the first class. By this means it is possible to raise such child into Class II.[1] Class II in the first year should be treated as Class I. When the child has learned to walk, it should be taught little games requiring movement, such as throwing and running after soft balls, riding a rocking-horse. Music, too, should be used and bright pictures displayed. The nurse should watch for the first power to use the hands and exercise it. Teach the child to imitate the movements of the lips and mouth in talking.

To Class III dressing lessons must be given, habits of tidiness and obedience to command taught, as well as lessons in speaking. Employ easy mechanical work, picking wool, sorting pieces of cut wood, playing with toys, Noah's arks, blocks and dolls.

Besides the fore-mentioned treatment a fourth class child should be taught to read, write, count and draw. More attention should be paid to behavior in the home, public places and the church. Use object lessons, teach form, color, to tell the time, simple weights and measures and the elements of geography. Teach them to play cricket, foot-ball, etc., out of doors; bagatelle and drafts, indoors.

Moral and medical treatment should go hand in hand. Take walks in fields, excursions to the seaside and to places of interest.

A child of Class V can seldom be improved much intellectually. Determine the grade of idiocy and treat accordingly. Such children are often more in need of individual training than others. Provide pleasing employment, but mental culture must be very gradual with this class.

Class VI must be treated even more on a medical and hygienic basis. These cases need the asylum.

Class VII may be well trained at home. They need much rest, slow movements and no gymnastics. Give them toys and simple finger exercises, and provide perambulators.

Class VIII needs most careful watching, much hard work, even mental anxiety, moral training and medical treatment.

Dr. Down also lays much stress upon care of the health and physical training, even to the minutest detail. Want of muscular coördination is the great fault of the feeble-minded, he says. All intellectual training must be based upon the cultivation of the senses. The child should be taught the useful necessary daily acts first, and later manual training. All this should be based upon utility. What makes a feeble-minded child useful makes him correspondingly happy.

### Results of Education.

As to the improvement made in idiots by training, "Not one in a thousand," says Seguin, "has been entirely refractory to treatment;

[1] Classes of Idiots.

not one in a hundred who has not been made more happy and healthy; more than thirty per cent. have been taught to conform to social and moral law, and rendered capable of order, of good feeling, and of working like the third of a man; more than forty per cent. have become capable of the ordinary transactions of life under friendly control, of understanding moral and social abstractions, of working like two-thirds of a man; and twenty-five to thirty per cent. come nearer and nearer to the standard of manhood, till some of them will defy the scrutiny of good judges when compared with ordinary young men and women."[1]

Dr. Howe wrote of the Pennsylvania School for Feeble-Minded Children:

"It has rescued some children of merely feeble minds from the imbecility into which they had fallen either through abuse or neglect, or unwise treatment,—children who were considered as idiots, and who would have sunk into hopeless idiocy but for the help of this school."

"It has given speech to some who were dumb, and who, if left without special aid, would have remained dumb."

"It has greatly improved the condition of more than four-fifths of its pupils, as their friends will testify."

"They have been put into a higher state of health and vigor. They have been trained to the command and use of muscle and limb. They feed themselves, dress themselves and conduct themselves with decorum. Their gluttonous and unseemly habits have been broken up. They have been trained to temperance, cleanliness and order, till these habits have become a second nature. Their powers of self-control have been increased, and they strive to make themselves less unsightly and disagreeable to others."

"Many of them have been trained to habits of industry, so that they may at least be less burdensome to their friends."[2]

In a report concerning the Royal Albert Asylum of Lancaster, England, and the results with feeble minded-children under the kindergarten system, we find:

"Of 100 who left the Royal Albert Asylum at the end of seven years, instead of 36 speaking well, as was the case on their admission, 50 spoke well; 22 spoke fairly, instead of 23; 13 spoke indistinctly, instead of 15; and 15 only, as against 26, were unable to speak intelligibly."

"Of 100 boys discharged after seven years' training, there were 36 who had learned to read, 14 well and 22 fairly; 36 who had learned to write, 21 well and 15 moderately."

As to after life and employment, of 176 who had had seven years' training:

18 (10%), earning wages; 9 (5%), remuneratively employed at home; 6 (3.5%), capable of earning, parents state, if they could find suitable situations; 38 (22%), more or less useful in small domestic matters at home; 39 (22%), at home, of little or no use; 51 (29%), in asylums or work-houses; 15 (8.5%), died since leaving.[3]

### Some of the Psychical Characteristics of Idiots.

*Sensibility and Touch.* It is difficult to succeed in the ordinary experiment for determining tactile sensibility with idiots, because it is impossible to rely upon their intellectual interpretation of what is wanted or what they experience. Apparently idiots do

[1] "On Idiocy," p. 74.
[2] Quoted by Ireland, p. 326.
[3] "The Feeble-Minded Child and Adult," p. 66.

not suffer severely from injuries that would be very painful to a normal person. Angry idiots sometimes pound their heads against the wall or floor, bite themselves, scratch their faces or pull their hair with seeming indifference to the pain. Frequently, a child who is annoyed will strike itself a stinging blow on the mouth with its fist. Ireland tested certain members of his institution as to their sensibility to heat by immersing their hands in warm water. They always withdrew them before the water had become unpleasantly hot to an ordinary person. Dr. Ireland tells of a boy who bore a severe burn with nitric acid with indifference. He could also endure a powerful current of electricity without uneasiness, but could distinguish between coarse and smooth cloth by the feeling, and seemed normal as regards temperature.

Sometimes the tactile sense is keenest in parts of the body other than the fingers; for instance, some substitute head touch for hand touch.[2] This may be especially noticeable in acts of caressing. When the hand is trained, the forehead loses its former power. Hyperæsthesia of the tactile sense is not uncommon according to Seguin. "Some of our children," he says, "will be unable to touch anything but with the delicacy of the humming-bird, and seem to suffer greatly from any other mode of contact imposed upon their hands. The feet of others are so much affected with similar exaltation of sensibility that the thinnest shoes pain them, and the contact of the softest carpet or floor makes them recoil or advance, as if they could not help it and as if walking upon live coals."[1] Here might be noted those curious acts which are apparently induced by "sensation hunger," many of which are described further on. Some flicker their hands briskly before the eyes, intercepting the rays of light that enter them; others beat the head against the arms, rub the hands, suck their fingers until they are parboiled like the hands of a washerwoman, bite the wrists, and the like.

*Sight.* Impaired vision in idiots is not often due to imperfect visual apparatus. Examinations have shown that the eyes of idiots are wonderfully free from defects. The trouble lies generally in the mental enfeeblement, whereby visual impressions are unattended to. Tambourini, Marselli and Benedekt[1] have noted frequent cases of flattening in the occipital region when there has been visual inability with perfect eyes. Some children are unable to learn from the sense of sight alone exact notions of form and dimensions of objects. Strabismus is frequent with idiots. Hypermetropia is very common with idiots and imbeciles, but myopia is very rare.[2]

*Hearing.* Ireland notices a connection between idiocy and deafness. Deafness, he says, frequently occurs in families where some of the other members are idiots. As with sight, hearing may be defective even when the organ is perfect. In such cases the idiot may hear sounds that are of interest, but no others. Itard's boy did not hear the report of a pistol, but immediately turned to look when the key was placed in the lock of the door to his room, and would seek for the nut that was dropped upon the floor behind him. Some idiots who pay no heed to loud and unusual noises, when thirsty will seek for water which they hear poured near them.

*Taste.* The sense of taste is commonly deficient.[3] Ireland tested

---

[1] "On Idiocy," p. 59.
[2] "L'Idiotie," Paris, 1893, p. 122.
[3] "On Idiocy and Imbecility," p. 259.

eighty idiots and found the sense of taste very deficient in twenty-two. Six more were defective in taste, but in a less degree. The worst tasting things are often eaten by them with indifference or even with pleasure. Some will eat soap, some have been known to enjoy the taste of turpentine, and some persist in eating garbage and filth of every kind. Medicine is no bugbear to these children. It is interesting to see the gusto with which they receive a spoonful of cod-liver oil. There seems to be an analogy here to the sense of touch or of pain, since a stimulus which would be positively painful to an ordinary person is received or self-inflicted by the idiot with manifest pleasure. Yet with this perversion of taste there is often, curiously enough, a choice as to the food on the table.

*Smell.* Taste is more often perverted than the sense of smell, but smell is oftener exalted.[1] Some children place everything to the nose rather than to the mouth. M. M., a girl, if given a piece of candy, prefers to smell of it rather than to taste it. A piece of evergreen is a source of constant delight to her.

It is very rare that the sense of smell guides idiots in the choice of food, though it sometimes happens. Voisin[2] gives the case of an idiot girl who would not drink from a glass in which there had been wine. Smell sometimes is wholly wanting. Voisin mentions also a girl who would smell of ammonia and cologne indifferently.

*Attention.* As was noted among the classifications of idiocy, Sollier makes attention the basis of his classification. He follows essentially Ribot's view.[3] "Attention, whether strong or feeble, is always and everywhere dependent upon the affective state, and its manifestation is essentially motor, that is to say, it always acts upon the muscles chiefly in the form of inhibition. The movements of the face, the limbs and the modifications of respiration are necessary conditions, the constitutional elements, the indispensable factors of attention. Given the motor power and the affective state and you have attention. If these two elements are altered, as in a case of idiots, one easily perceives the lesion of attention."[4] As to the affective sentiments in general, Sollier says, "they are either wholly or partly wanting." As to the second factor, the motor element, it presents frequent anomalies, paralyses, contractures, convulsions, automatisms, etc. Weakness of the fundamental instincts, hunger, and the imperfection of sensation, weaken the power of attention.

Education consists almost exclusively in calling into play the voluntary attention; and Ribot distinguishes three periods in the formation of this attention:

1. Education has action only upon the simple sentiments: cruelty, egoistic tendency, attraction of reward, tender emotion and sympathy, curiosity, etc.

2. The attention is sustained and carried by the formation of secondary sentiments: love of property, emulation, ambition, interest, duty, etc.

3. The period of organization: attention is sustained and carried by habit.

Idiots in general are very deficient even at the first of these periods. With some idiots attention depends wholly upon sense of hunger or thirst, or some want. Association may be formed be-

---

[1] "On Idiocy," p, 61.
[2] "L'Idiotie," p. 134.
[3] "Psychologie de l'Attention." Paris, 1889.
[4] "Psychologie de l'Idiotie et l'Imbécile." Paris, 1895, pp. 66-67.

tween certain things or acts and the feeling of satiety or relief. Attention, then, may be induced by sight of certain things, as food, for example.

### Statistics.

The total number of persons living in the United States on the first day of June, 1890, and reported as feeble-minded or idiotic, was 95,571, of whom 52,940 were males and 42,631 were females; 84,997 were white, of whom 75,910 were native born and 9,087 were foreign born; 10,574 were colored, of whom 5,788 were males and 4,786 were females.[1]

The following shows the increase from 1850. Total number of idiots in the United States:[2]

| 1890 | 1880 | 1870 | 1860 | 1850 |
|---|---|---|---|---|
| 95,571 | 76,895 | 14,485 | 11,080 | 9,149 |

The number of feeble-minded persons per 1,000,000 of population:

| 1890 | 1880 | 1870 | 1860 | 1850 |
|---|---|---|---|---|
| 1,526 | 1,533 | 636 | 602 | 681 |

In 1880 there were in institutions for the feeble-minded, 2,429.

In insane asylums and hospitals, 1,141.

The total number of feeble-minded persons in the public and private institutions of the United States, according to the report of the commissioner of education, 1891-1892, was 6,101. What is being done for the remaining 90,000?

The total number of persons returned as idiots or imbeciles for the census of 1881 for England and Wales was 32,717, or one such person for every 794 of the population.[3] For reasons which are enumerated in the report, these returns are far from trustworthy. A corrected estimate places the number at 41,940, which again, the report says, is doubtless too small.

We have seen that the training of idiots is a work of the present century, and that it was undertaken in the first place for a philosophical rather than a charitable purpose. The asylum to-day in its work of love should serve none the less as a laboratory for the solution of problems of universal import. Humanity is always best served when charity and science unite.

Statistics show that the number of feeble-minded persons is very large and that idiocy has increased. The number of institutions for the feeble-minded is very small.

Idiocy is due in the majority of cases to some hereditary taint, fault or ignorance of parents. There is great need of a better knowledge of heredity and of the hygiene of parenthood on the part of the people. A knowledge of institutions should be spread. Parents of feeble-minded children are naturally very reluctant to send their children to such institutions. If they could know more of the work of such schools, if they could see the progress made and the happiness which these children enjoy in a good institution, reluctance would be replaced by eagerness.

Seguin is the great pioneer and master in the education of idiots. The principle enunciated by Seguin in his physiological method, viz., that "the peripheral organs, the special senses, the cutaneous

[1] Compendium of the Eleventh Census, 1890, Part II, p. 133.
[2] House Miscellaneous Documents, 2nd Session, 47th Congress, 1882-1883, Vol. XIII, Part II.
[3] Census of England and Wales, 1881, Vol. IV. General Report, p. 68.

and muscular senses, must be carefully trained at the same time that the purely cerebral functions are developed by ordinary teaching," is a fundamental principle for a universal primary education, but unhappily too little appreciated. Every primary and kindergarten teacher should study Seguin.

## II.

### Memory-Span of Feeble-Minded Children.

With idiots we find the weakness of memory we should expect from their lack of desire and inability to attend. That this weakness of memory is due in any large degree to lack of physiological retentiveness, is by no means certain. It is well known that examples of extraordinary memory, in certain lines, among idiots, is not uncommon. Scupture's study of arithmetical prodigies shows that these men possessed wonderfully retentive and quick memory for numbers, but the general intelligence of some of them was of very low order.[1] In speaking of *idiots savants*, Dr. Down tells of one boy who could recite all the answers in Magnall's Questions without error. There are other cases where there has been a remarkable memory for names, addresses, dates, etc. One boy could hum every tune correctly that he had just heard at an opera.[2] Ireland quotes from Dr. Forbes Winslow the case of a man who could remember "the day when every person had been buried in the parish for thirty-five years, and could repeat, with unvarying accuracy, the name and age of the deceased and the mourners at the funeral. But he was a complete fool. Out of the line of burials he had not one idea, could not give an intelligible reply to a single question, nor be trusted even to feed himself."

By memory-span is meant the limit of the power of the memory to reproduce from a single hearing or seeing, immediately and without error, a succession of figures, nonsense syllables, or

| | No. of Cases. | Greatest Number of Figures that could be Recollected. | | No. of Figures at which the Memory First wholly Broke Down. |
|---|---|---|---|---|
| | | Perfectly. | Imperfectly. | |
| A | 1 | 2 | | 3 |
| | 1 | 3 | | 4 |
| | 1 | 4 | | 5 |
| | 2 | 4 | 5 | 6 |
| | 4 | 5 | | 6 |
| B | 1 | 2 | | 3 |
| | 2 | 3 | | 4 |
| | 1 | 4 | | 5 |
| | 1 | 5 | | 6 |
| | 1 | 6 | | 7 |

[1] *Am. Jour. Psych.*, Vol. IV, No. 1.
[2] "On Idiocy and Imbecility," p. 286.

letters, etc. Immediate memory is a designation sometimes employed. It has been thought by some that the memory-span is an index of mental power.

Galton[1] tested the memory-span of idiots at the Earlswood Asylum. He selected nine of the best girls from the class-room. They could read and write a little, but could not add 3+5, etc. The results of these tests are shown in the opposite table, A. Six other girls were tested, with results as shown in the table, B.

With the inmates at Dartford were obtained the following results. The lower figures indicate the number of children who succeeded in repeating the series denoted by the figures above. A figure placed between columns indicates a doubt as to which of the two columns it belongs.

Class 1. The four sharpest children, ages 9, 12, 13, 15. The quickest of these, who repeated nine figures, was only "morally imbecile."

| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|
| | | | 1 | | 2 | | 1 | |

Class 2. Ages 9-16.

| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 1 | 1 2 | 1 1 | 1 | | | | |

Class 3. Three of those whose span was only 2 had been removed from school for nearly twelve months. Their ages were 18, 18 and 19. The others range from 11 to 15.

| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|
| 4 | 2 | 5 2 | | | | | | |

Class 4. Ages 11-15.

| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|
| | 2 | 1 | | | | | | |

Careful and extended observations upon the memory-span of school children have been made by Jacobs,[2] Bolton,[3] and Bourdon.[4] Galton's observations of idiots were supplementary to Jacobs' work. The writer has undertaken to compare results obtained from feeble-minded children with those obtained by the above-mentioned gentlemen from normal children. The children observed were inmates of the Massachusetts School for the Feeble-Minded, at Waltham. They were, with a few exceptions, the so-called "school-cases."

The tests were made as follows: Each child was taken apart from the rest, and after a few preliminary tests, to insure the clear understanding by the subject of what was to be done, a series of digits was read off, which were immediately repeated orally by the subject, the result being entered in a note-book. The first series given consisted of three figures, *e. g.*, 7, 4, 9. Six series constituted a test. Series of four figures were used in the second test, five in the third, and so on. The usual conditions as to monotonous and measured utterance were observed, about three-fifths of a second being the time allowed for the speaking of each word.

---

[1] *Mind*, 1887. p. 79.
[2] *Mind*, 1887.
[3] *Am. Jour. Psych.*, Vol. IV. p. 362.
[4] *Revue Philosophique*, Aug., 1894.

Below is given one of Jacobs' tables, showing the results obtained from the pupils of the North London Collegiate School. The answers were not given orally, but were written. The averages are made from the highest numbers of digits correctly reproduced by the several pupils:

| Age, | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of Subjects, | 8 | 13 | 19 | 36 | 41 | 42 | 42 | 72 | 66 | 50 | 30 | 14 |
| Average of Numerals, | 6.6 | 6.7 | 6.8 | 7.2 | 7.4 | 7.3 | 7.3 | 7.7 | 8 | 8 | 8.6 | 8.6 |

Of seventy-two feeble-minded children who were tested by the writer, throwing out two who could not understand the test, the average limit or span, according to Mr. Jacobs' method of computing, was 5.3. This is less than the average found for normal children of eight years of age by 1.3.

Of 72 children, 70 succeeded in repeating 3 digits correctly.

66 " " " 4 " "

51 " " " 5 " "

27 " " " 6 " "

14 " " " 7 " "

4 " " " 8 " "

Thus 27, or 36%, were .6 below normal children of 8 years; 14, or 19%, were .2 below the average for children of 11 years; while 4, or 5%, surpassed the average for children of 15 years.

From the above it will also be seen that 4, or 5%, reached their limit at 8 numerals; 10, or 14%, at 7; 13, or 18%, at 6; 24, or 33%, at 5; 15, or 20%, at 4; 4, or 5%, at 3.

Mr. Bolton found the per cent. of correct answers for 4, 5, 6, 7 and 8 place numbers. The following shows his results for the pupils of the Freeland street school, Worcester, Mass., at the first test:

| No. of Digits. | Per Cent. | No. of Digits. | Per Cent. |
|---|---|---|---|
| 4 | .92 | 7 | .379 |
| 5 | .79 | 8 | .256 |
| 6 | .601 | | |

For feeble-minded children the results obtained by the same method of computation give the following table:

| Number of Children. | | Per Cent. of Correct Answers. | | | | |
|---|---|---|---|---|---|---|
| Group of | Average Age. | Number of Digits. 3 | 4 | 5 | 6 | 7 |
| 72 | 13.4 | 93 | 83 | 47 | 25 | |
| 63 | 12.7 | 100 | 91 | 53 | 29 | |
| 37 | 14.4 | | 100 | 86 | 50 | |
| 13 | 13.9 | | | 100 | 93 | 50 |
| 8 | 15.5 | | | | 100 | 62 |
| 2 | 14.2 | | | | | 100 |

Here it will be seen that the averages for all the feeble-minded children fall far below those of the normal children. But 63 of the 72 children almost reach the average of the normal children for 4 place numbers; 37, or 51%, surpass the average of the normal

children for 5 place numbers, and 13% surpass for 5, 6 and 7 place numbers.

Bourdon tested boys singly and orally. He gives the following table:

| Age. | No. of Cases. | Per Cent. of Correct Answers. Number of Digits. 6 | 7 | 8 |
|---|---|---|---|---|
| 8 | 6 | 22 | | |
| 9 | 13 | 59 | 13 | |
| 10 | 12 | 56 | 28 | |
| 11 | 6 | 61 | 5 | |
| 12 | 9 | 74 | 37 | 19 |
| 13 | 7 | 43 | 33 | 19 |
| 14 | 7 | 90 | 43 | 33 |
| 15 | 5 | 47 | 40 | 20 |
| 16 | 7 | 62 | 33 | 14 |
| 17 | 9 | 70 | 26 | 15 |
| 18 | 8 | 58 | 46 | 25 |
| 19 | 7 | 83 | 28 | 6 |
| 20 | 8 | 75 | 46 | 29 |

Feeble-Minded Children.

| Age. | No. Cases | Per Cent. of Correct Answers. Number of Digits. 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 8 | 2 | 100 | 75 | 41 | | |
| 9 | 6 | 100 | 80 | 58 | 30 | 8 |
| 10 | 5 | 56 | 50 | 20 | 6 | |
| 11 | 6 | 90 | 80 | 38 | 16 | |
| 12 | 7 | 92 | 80 | 52 | 6 | |
| 13 | 10 | 100 | 75 | 41 | 33 | 16 |
| 14 | 9 | 96 | 74 | 46 | 24 | |
| 15 | 5 | 100 | 90 | 43 | 20 | 13 |
| 16 | 3 | 100 | 100 | 88 | 72 | |
| 17 | 4 | 79 | 79 | 37 | 20 | |
| 18 | 3 | 100 | 88 | 33 | 33 | 27 |
| 19 | 4 | 100 | 100 | 79 | 50 | 8 |
| 20-21 | 2 | 100 | 100 | 83 | 91 | 8 |

Although we cannot class feeble-minded children by age and have the classifications speak with any special significance, it is nevertheless interesting to compare the above table with Bourdon's. Here, again, the difference between normal and feeble-minded children is marked, but there are striking exceptions. The group of 6, 9 years old feeble-minded children surpass the group of 8 years old normal children for 6 place numbers. The group of 16 years old feeble-minded children surpass Bourdon's children of the

same age for 6 place numbers. Also the two of 20 and 21 years surpass Bourdon's average for boys of 20.

These tests were made under conditions rather unfavorable for obtaining the highest results from the children tested. The entire number of series was given to each pupil at one sitting. If a child passed successively from the six series of 3 place numbers, through the series of 7 place numbers, there were thirty repetitions to be made, each requiring perfect attention. This is a great tax upon a feeble-minded child. The tests were made under conditions, also, many times when there was much to distract the attention of the subject through noise or passing of children. There is no doubt that the results obtained are not above, but rather below, what might be expected under other conditions.

As to the character of the errors, they were similar to those observed by Mr. Bolton with normal children. Transposition was by far the most common error, the first and last figures were best remembered. One noticeable error was the transposition of a figure two places from its original position. There was one case of tendency to duplicate, as was noticed by Galton, where the subject inserted an extra figure, repeating one of the original figures twice, as 3, 2, 3, 4 for 3, 2, 4.

Much interest was generally manifested by the children in these experiments. They were anxious to do well, and often asked: "Did I do all right?" They were usually susceptible to emulation. It was striking how their flagging attention and almost collapsing memory could be stayed for further trial by praise and encouragement, or by incitement to surpass another.

The results of the memory tests show that the feeble-minded fall considerably below normal children in memory-span. But the memory-span is so good in some cases, and the average for the majority is so high, that we are led to conclude that the degree in which the memory-span of feeble-minded children falls below that of normal children is not commensurate with the degree in which the feeble-minded fall below normal children in general intelligence. Moreover, it is evident that the deficiency in attention and will-power, so proverbial in the feeble-minded child, would tend to cause the memory-span to be lower than that which a normal child of equal physiological retentiveness of memory would have. Hence we may conclude that weakness of memory, physiologically speaking, is not a specially prominent factor in feeble-mindedness.

As to the relation of the memory-span to intelligence in these children, there was generally an increase of memory with intelligence, but there were notable exceptions. It was impossible to arrange the children tested all in one class in the order of their intelligence. However, some of them were thus arranged in different classes, and below will be found tables indicating the relation of memory-span to intelligence.

CLASS I.

| Place in Class. | Memory-Span. | Place in Class. | Memory-Span. |
|---|---|---|---|
| 1 | 8 | 11 | 4 |
| 2 | 8 | 12 | 5 |
| 3 | 8 | 13 | 6 |
| 4 | 7 | 14 | 4 |
| 5 | 7 | 15 | 5 |
| 6 | 5 | 16 | 4 |
| 7 | 4 | 17 | 7 |
| 8 | 5 | 18 | 4 |
| 9 | 6 | 19 | 4 |
| 10 | 5 | | |

CLASS II.

| Place in Class. | Memory-Span. | Place in Class. | Memory-Span. |
|---|---|---|---|
| 1 | 8 | 5 | 3 |
| 2 | 5 | 6 | 6 |
| 3 | 7 | 7 | 7 |
| 4 | 7 | | |

CLASS III.

| Place in Class. | Memory-Span. | Place in Class. | Memory-Span. |
|---|---|---|---|
| 1 | 6 | 6 | 5 |
| 2 | 5 | 7 | 5 |
| 3 | 6 | 8 | 5 |
| 4 | 6 | 9 | 4 |
| 5 | 4 | | |

CLASS IV.

| Place in Class. | Memory-Span. | Place in Class. | Memory-Span. |
|---|---|---|---|
| 1 | 5 | 5 | 3 |
| 2 | 5 | 6 | 4 |
| 3 | 7 | 7 | 3 |
| 4 | 4 | | |

CLASS V.

| Place in Class. | Memory-Span. | Place in Class. | Memory-Span. |
|---|---|---|---|
| 1 | 4 | 5 | 3 |
| 2 | 5 | 6 | 4 |
| 3 | 7 | 7 | 6 |
| 4 | 2 | | |

## The Motor Ability of the Feeble-Minded.

No one who has ever seen a company of low grade feeble-minded persons will ever forget the strange anomalies in their movements. The rolling head, the convulsive shiver, the contorted features, the strange postures of hands and body, the puzzling gesticulations, the rocking gait, leave an indelible impression even among all the other curious and at first deeply repulsive features presented by this unfortunate class. I believe no special study has ever been made of the motor ability of idiots. Many writers have spoken of the curious motor abnormalities seen among them, but no one has made an attempt to study at length their spontaneous movements, or to compare the willed movements to those of normal children and adults.

Every living idiot has some motor power. Indeed, in some of the lowest cases there is found the most incessant motion. Many of these movements involve only the fundamental muscles of the trunk. M. W., a girl, sits upon a settee and rocks constantly back and forth. Many cases of this kind are noticed among the girls. Often the rocking is accompanied by the humming of a measure or two of some real or fancied tune. One woman rocks herself constantly when in a rocking chair, but generally sits still when on a settee. A different movement, and doubtless made for a different purpose, although involving the trunk muscles, is that of F. C., a boy of nine. This boy sits upon the floor or settee with legs crossed Turkish fashion under him; his arms are crossed and placed in front of the knees. The body is then raised, while the arms remain upon the floor, and the head is brought down like a trip-hammer upon the wrists. The beating is rapid, and if the boy is undisturbed will continue incessantly for hours. Upon the forehead and arms where the blows have fallen, the skin has greatly thickened.

E. C., a girl ten years old, rocks in a still different manner. She never sits down in a chair in the ordinary way, and if forced to do so will immediately return to her favorite position. She crosses her legs under her, half sitting, half kneeling, facing the back of the chair, with arms folded upon it, and rocks back and forth. Sometimes this is changed to a jouncing motion, with the hands rubbed up and down the lap, while at the same time a loud, harsh, wheezing noise is made, corresponding somewhat to the "huh" of a chopper. It is curious to note the persistency of some of these attitudes. This girl, when given a piece of candy, inserted it in her mouth only after she had replaced her arms in their peculiar position, reaching her mouth in a very roundabout way. H. G., a girl, age seven, is another head beater. She sucks her thumb, then her fingers, changes fingers, runs her tongue out and strikes it with forefinger or thumb, rocks backward and forward, swings head forward, backward, sidewise, alternating these movements often. She keeps her knees crossed. When she beats her head upon her arms, the blows fall sometimes upon the chin instead of the forehead. A moaning accompanies the beating as though she were in pain. If checked in the head beatings, she will often strike herself a stinging blow upon the mouth with her fist. Head movements are not infrequent. C. B., a boy of nineteen, stands erect, throwing his head far back and turning it with a uniform though rather quick movement from side to side.

The jaw is sometimes represented in these movements. One of the girls bites her apron with a quick, jerking motion of the jaw, making a noise much like that of a bullfrog. Another gives a jerk-

ing motion to her jaw with nothing in the mouth. One of the schoolboys "chews" even when there is nothing in his mouth.

Arm movements are largely combined with finger movements. A boy of nine flickers his fingers swiftly back and forth before his eyes, intercepting the rays of light which enter them. This movement changes to drumming his under lip, or to touching his fingers alternately to his thumb. This is often accompanied by a shrug of the body, like that of a child riding a jack-horse, and by a chuckling noise or a chirp as shrill as that of a bird.

F. B., a girl, age fourteen, wets her right hand with the drool from her mouth, rubs it on the palm of her left hand, occasionally patting the hands together. The right hand is always the active member, the left being held palm up. After patting the left hand, the right hand is often rubbed over the face as in washing. This same girl has a peculiar habit of putting her right middle finger against the left upper canine tooth, pressing it slightly. The finger is removed, looked at (about the only thing this girl ever looks at) and the process is repeated. The ritualistic exactitude and definiteness of these movements are very striking. A. L. crosses her left ring finger under the middle finger, placing her thumb against the ring finger, the forefinger dropping down over the thumb; the right thumb and forefinger touch, the little finger being crossed under the middle finger. With wrists crossed so that the fingers point towards the breast, always in exactly this position, she beats the tips together. One girl snaps the knuckle of her left middle finger with the thumb of the other hand; another places thumb and forefinger together and shakes hands in short, swift oscillations.

E. B., a boy, age eighteen, rubs his hands, then shakes them, the arms being held horizontal and moved towards the centre of the body. He also pats the back of his right hand in the palm of the left. Sometimes he stands and rocks his body from side to side.

Perhaps among these spontaneous movements may be classed also those movements of the muscles of the face which are seen in the gesticulating children. A. N., a girl unable to talk, has a constant change of facial exeressions. This is accompanied largely by gesticulations of the hands. In her face one may read what would ordinarily be interpreted as surprise, interrogation, assent, negation, deference, following in quick succession. The tongue protrudes and the face expresses dissatisfaction, as though there were a bad taste in the mouth. Then the eye-brows are lifted, then the eyes are squinted, a laugh follows, and then a scowl. She will point and gesture with her hands, accompanying the motion with expressions of the face as though she was an educated deaf mute, but apparently there is no idea which she desires to express. I endeavored to communicate to her, by motions, that I desired her to get my hat which lay on the piano, but, though she answered me with animation in her own language, we did not understand each other. Sometimes she will open the door for an attendant and bow her out with the greatest ceremony. Any gesture made to her is immediately imitated or followed by one of her own which is similar. I made a peculiar move of my head to her on one occasion. I repeated this several times at intervals and it was followed on her part as quickly and uniformly as though she were worked with a string. G. P., a boy aged nineteen, is another gesticulator. He imitated any movement of the hand or arm, but had not much change of facial expression.

A higher grade of movements, which, nevertheless, in some respects seem akin to spontaneous movements, are those which

are exerted upon some external object. A. R., a boy twelve years old, knows almost nothing. When pleased he rolls his head and then rubs his hands in front, bowing head and body. He follows this by putting his hand upon his head behind his ear. His delight is a piece of cardboard and a clothes-pin. He takes the clothes-pin between thumb and forefinger and twirls it upon the card. He does not grasp the pin ever, although he has some prehensile power. This boy would attend to sound and also to objects moved in front of him.

C. B., the boy who rolls his head, has a curious but very dear toy. It is simply a long strip of cotton cloth, which he rolls up with his fingers, unrolls, repeating the operation over and over. In the night he will sometimes sit up in bed rolling and unrolling his treasure for hours at a time. "It makes a nice roll," he says.

A., a boy, age eighteen, sits playing with the lapel of his coat, twirling the raveling between thumb and forefinger. This raveling he bites off. Large portions of his coat are bitten off in this way.

W. M., a boy aged eighteen, is tall, bony and very strong. He scowls, shakes his head, shrugs his shoulders, squints his eyes, and has an anxious look. He is very suspicious and restless, wants to be let alone, and is obstinate. He cannot talk. He throws his head back, then to the right side, and puts his tongue against his teeth, making a blatting noise. He performs his motions at his shadow, tears his clothes, pulls out the threads and blows them into the air. These threads he twists together, making a very long string, which he winds into a ring. This he plays with by placing it upon the back of a chair, edge of the table or his shoulder and dropping it.

The feeble-minded were remarkably free from the nervous twitchings and the bad hand postures mentioned by Dr. Warner. I found one case of convulsive hand and two of twitching fingers. In two cases the arms twitched, but not the fingers. Occasionally the thumbs drooped.

The test for bilateralism gave no striking results.

In the movements described we have an interesting though puzzling psychological problem. Do they result from some internal condition of the nerve centres which produces a tendency to discharge along certain tracts, or are they in fact purposive movements executed for the sake of the sensation produced? Seguin distinguishes four classes of anomalous movements: "Disordered, when their want of harmony prevents the accomplishment of their object; mechanical, when their recurrence, in the course of other normal movements, cannot otherwise be produced or prevented, but can hardly be postponed by a superior influence; spasmodic, when they proceed from an accessory condition of the nerves co-gener to chorea or epilepsy; automatic, when they consist in the continuity or frequent recurrence of a single unavoidable gesture without object or meaning."[1] The movements which have been described, the writer understands to be what Seguin would call automatic. Movements which were manifestly spasmodic have been only incidentally mentioned. These movements were, however, more or less under the control of the will. Many could be stopped at will by those who made them, and often were stopped at the command of an attendant.

Anger was sometimes manifested at being checked in the movements, and it is natural to suppose that pleasure or relief of some kind was involved in all of them. It seems that a stimulus which would be extremely painful to a normal person may be pleasurable

[1] "On Idiocy," p. 57.

to an idiot, for example, the powerful stimulus of head beating. But that there should be this great difference between these head beaters and normal persons in the pleasure-pain threshold is not so surprising when we learn that B. R., a boy of nine, once remained all day with his dress actually pinned to the flesh and made no complaint. Yet some of the stimuli in these movements are very gentle. This same boy who beats his head so severely rubs the tips of his fingers over his thumb or drums them upon his lips. If you touch him gently on the cheek or neck, he will cease beating to turn his head in endeavor to be free from the touch. One girl will sometimes touch the fingers together lightly, giving a squeal of delight. Whether the latter is an expression of a native, physical well-being, or the result of the touching of the fingers, is hard to say, but they are coincident.

In regard to the light which these movements may throw upon the psychic life of the idiot, it is of advantage to compare the idiot to the new-born infant. The psychic life of a babe just born is reflex, instinctive, emotional; its movements are reflex, instinctive or impulsive movements. It has sensations, but not yet percepts. But very quickly, in the case of the normal child, out of these first movements develop voluntary movements, out of the sensations percepts. Preyer says the infant just born is totally deaf and quite incapable of seeing. That this deafness and blindness are due to any physiological immaturity of the organs is not certain. It is possible that sound is transmitted immediately after birth, but the sensation is received by a mind perfectly empty of percepts. Why should the child turn his head toward sound? There are no associations in his mind, no ideas possible to be awakened by sound. Preyer's experiments prove that the infant's eye is sensible to light a few minutes after birth. The writer sees no reason why we should not suppose that images are found on the retina and perfectly correct impressions conveyed to the brain of a new-born infant. That there is no distinction of color, nor of boundary, nor of form, if such be true (for perhaps colors produce their characteristic sensations from the first), may be due not to any real blindness or fault of the organ, but to emptiness of the mind. In other words, the infant, if deaf and blind in any sense, is intellectually deaf and blind; or at least, and this serves as well for the illustration, there comes a time when he is only intellectually deaf and blind. The stimulus of sound or of light is *sensed*, but not *perceived*—the impression is made in the nerve centre, but not recognized. There are auditory sensations and visual sensations, but not auditory and visual percepts. These follow very quickly in the case of the normal infant; with the idiot they may come very tardily or not at all. The intellectually deaf and blind children mentioned by Seguin are in point, where perfectly formed eyes accompanied blindness and perfect ears deafness. This intellectual deafness and blindness (why should we not as readily extend it to all the senses?) may continue in regard to certain stimuli, but be overcome in others; for example, Itard's boy heard some sounds, and others equally loud he did not hear. There is not sufficient reason for thinking that the organs were incapable of receiving and transmitting the sound which was not "heard." The reason was intellectual rather than physiological. One stimulus resulted only in sensation, the other produced a sensation that awakened an already developed percept. Cases of intellectual color-blindness are common in school children, and feeble-minded children who see perfectly well, and even uninstructed deaf-mutes of six or eight years of age, are unable to recognize pictures. Nowhere can we draw a definite line between sensation and perception.

Whether we have one or the other is a matter of native intelligence or of education.

Now with idiots it would seem that the higher process whereby the phenomena that are predominantly physiological become predominantly intellectual, is deficient or wanting. The psychic process stops very largely at sensation, the transition to percepts and to ideas cannot be made. Endowed with sensibility and considerable energy in many cases, but lacking even the instincts which direct to a purpose the movements of lower animals, their life is passed in the pursuit of sensations, and that, too, of sensations which are gross, fundamental, and farthest removed from those which usually give knowledge of the qualities of objects.

As regards the education of idiots, these spontaneous movements may have great importance, and they give valuable hints concerning the psychic life.

There is a tremendous energy manifested in a few of these movements, and where the movements are less energetic, the expenditure may be great in proportion to the amount there is to expend. All this force is needed for movements that are rational. Hence it would seem necessary in training an idiot, for the best results possible, either to check his expenditure or in some way divert it into movements made for some purpose other than sensation. I do not see why, in some cases at least, these movements might not be the bases upon which could be formed useful movements. C. B. could roll surgeons' bandages into "nice rolls" with pleasure and usefulness, if there were such to be rolled. Apparatus might be devised to aid in checking some of the movements. Rubbing or patting of the hands could, perhaps, be very gradually developed into movements by which the hands might be trained to grasp, to button, to wash each other, etc. It has been demonstrated that if the right order is followed, great progress is possible. Seguin in training the "idiotic hand" of R. began with those movements which were already under some control, viz., the elevator muscles of the arm, and descending successively, gradually from the spine, he brought under intelligent control the movements of the arm and the hand. "In the first place," he says, "the movements commanded to R. were those commencing nearer the spine; the trainer gradually extending the operations of the will (the will communicated to the pupil by imitation or command) to the groups of muscles approaching the extemities. Thus the limb, in training, not only became capable of a few willed movements of totality—later applicable to a great number of operations and convertible into smaller movements of the farther extremities,—but the mind, being drilled to be carried over regions previously ruled by automatism alone, extended its dominions and circulated, as if at home, from the great centres to the most delicate groups of sensitive and contractile tissues at the periphery, and soon thence reached centripetally."[1]

Here it may be said that nothing regarding the education of the feeble-minded seems more urgent to the writer than the earliest possible training. If it is important to correct automatisms, it is important that they should not be allowed to become deep rooted by years of practice. Nor should the hands be allowed to pass these early years utterly without intelligent movements. The earliest departure from the normal should be the signal for beginning motor and sense training. From what has already been said, it is

[1] "Psycho-Physiological Training of an Idiotic Hand," Archives of Medicine, Vol. II.

easy to see the importance of early sense training for the idiot. The baby's hand finds knowledge in feeling, the idiot's does not. Sense impressions in the normal child are enjoyed for their mental stimulus,—he has an intellectual interest in things. Sense-impressions in the idiot are of interest for their effect in the physical organs, for pure sensation tone. Hence, an impression with a minimum of sensation, such as sight or sound, is unheeded; only bright and dazzling objects, as in the dark room, or music can attract his vacant look, or catch his ear. He must be *startled* from his automatisms, new paths of motor discharge must be opened up to oppose them, and then the process of transformation of physiological into intellectual elements must be awakened in him. This process, which begins in the normal child at once, should not be delayed in the idiot for years. That this process can be awakened has already been fully demonstrated in cases of apparently hopeless idiocy.

*Voluntary Movements.* Very low grade cases were tested as to their ability to execute definite willed movements. It will be interesting to describe in detail some of these cases:—

D. C., age fifteen, is a fat, strong, clumsy girl about five feet in height, with wide face and head, red cheeks and happy expression. She cries and laughs as easily as a baby. She is one of the rockers, and sways backward and forward with a singing noise. This she will stop at command. When happy she touches the lips of her fingers to each other, often giving a squeal of delight. Convulsive movements of the fingers are noticed during this exercise. She regards her fingers for a moment, contorts her face, then laughs gleefully. Her head sometimes drops forward, her chin resting upon her breast, while a convulsive shiver passes through the body, her arms being tightly folded. This was especially noticeable when she was made to stand.

She cannot dress nor wash herself, but is able to get out of bed alone and feeds herself at the table. She marches awkwardly with a bob and a hitch of the body, right foot forward. She can rub the floor a little. As to her intellectual life, she is said to remember her people when they visit her; knows when her hat and shawl are on, that she is to go out; remembers her place at the table. She does not talk, although she is able to say a few words. The bright moment in her intellectual life was one day when, as Superintendent Fernald was passing, she exclaimed, to the amazement of all of the attendants, "Halloa, Doctor." She is not devoid altogether of the power of attention, as the following tests show: She regarded a toy cat which was handed to her, thirty seconds. She followed with her eyes twelve times a pencil moved before her face. She regarded a book for about a minute, laughing hysterically and occasionally singing. She gave attention to a small bell that was handed her, and seemed amused. She understood such commands as "rise," "sit down," "hold out hands," "put out foot." This girl could stand very still, except for the occasional shiver previously mentioned. The control of the arms was poor; she could fold them, but could extend them vertically or horizontally only very imperfectly. She could do from imitation what she apparently could not do from command, although she seemed to understand. She had little control of the fingers, and could not imitate the finger movement shown her.

A. C., girl, age sixteen, talks, but not with understanding; is large, full-fleshed and strong; did not succeed in putting hands out in front until she took blocks in her hands and imitated gymnastic movements counting rhythmically. When asked to put out her

hands, her arms became stiff while her hands were thrown back, fingers spread. It seemed easier for her to place hands over her head. She could swing her arms well, walked strongly with feet spread, could kick, skipped rhythmically as if trying to dance, and clapped her hands rhythmically. At first she had much difficulty in opening and shutting hands, but with a little practice succeeded in doing it when I counted for her.

M. W., adult female, who can talk, when told to put out her hands in front, the position being shown her for imitation, placed her left hand in front and her right behind. She had difficulty opening and closing hand in command; in her endeavors the hands were clenched tightly, the wrists being twisted down and out. She had no difficulty in clasping a stick that was given her, and later extended her right arm in front, with fingers spread.

K. A., female, age thirty-five, has a large, bony frame; can scrub and make beds. She is fond of waltzing, and waltzes alone to music in good time, and quite gracefully. When tested in arm swinging, she made seventeen revolutions in ten seconds, but succeeded in opening and closing her hand only seven times. She was unable to spread her fingers laterally.

The tests just mentioned, and also those made with higher grade cases, the description of which is to follow, are suggestive rather than conclusive in anything. The difficulty of making tests with the feeble-minded is apparent. What might be easy with normal children of six or eight years, with feeble-minded children can not be done. A test which requires any introspection on the part of the subject must be discarded, except in the most intelligent cases, where, of course, the test becomes proportionately less valuable as the subject approaches the normal. But these few tests show that experimental psychology and pedagogy have no impossible field even among idiots. With limited time and facilities, comparatively meagre results only could be obtained, and yet the writer feels justified in claiming for them much that is suggestive and useful.

Thirteen boys in the training class (which precedes school-work) being engaged in stringing beads, were timed to see how many beads they could string in two minutes. They were told to string as fast as they could, and they were eager to be quick. Most of them had practiced this exercise for one year or more. The average number strung in two minutes was 18.9. These boys were asked in turn to drive a nail. None of them, probably, had ever tried it before. Eleven succeeded, seven doing very well indeed. One who had much difficulty in holding the string in his fingers properly and in stringing the beads, pounded away at the nail with delight and success. Nine of these boys succeeded well in throwing a ball over-hand.

Swaying tests were made on seven boys and five girls with the ataxiagraph. Nine of these children were school cases. The averages were as follows:

7 boys, average age 13 years, 6.52 cm. by 4.44 cm., eyes open.
5 girls, " " 13.4 " 5.76 cm. by 4.7 cm., " "

Hancock's tables show the following results:[1]

35 boys, 5 years old, 5.8000 cm. by 5.2228 cm., eyes open.
22 girls, 5 " " 5.7773 cm. by 4.9500 cm., " "

[1] PEDAGOGICAL SEMINARY, Vol. III, No. 1.

Tests were made in order to find the ratio of the rapidity of shoulder to finger movements. The number of revolutions that the arm could make in ten seconds was recorded, and also the number of times that the hand could be opened and shut in the same number of seconds. The averages were as follows :

| | Shoulder. | Finger. | Ratio. |
|---|---|---|---|
| 8 feeble-minded boys, average age 13.6 | 21.60 | 17.62 | 100:81 |
| 8 " " girls, " " 16.1 | 21.25 | 20.25 | 100 :93.2 |
| 13 boys, normal, " " 13.6 | 26.85 | 25.15 | 100 :93.6 |
| 12 men, " | 25.4 | 32.7 | 100 :128. |
| 5 women, " | 22.6 | 32. | 100 :141. |

There was very general difficulty even among school cases in opening and shutting fingers laterally. One, a boy of eleven, could not succeed at all, one succeeded with great difficulty, one succeeded with right hand, not with left, twelve succeeded with slowness and difficulty. Some could open between the first and middle fingers, not between middle and ring fingers. Some who could open fingers laterally could not open first finger alone. Many could not open between middle and ring fingers, but could between first and middle. In attempting these movements other movements were often made, for instance, swinging of wrist, partly closing hand, or even shaking whole fore-arm.

The foregoing observations and tests are corroborative of Mr. Hancock's conclusion, that the fundamental precedes the accessory in the development of motor ability. It is important to note that all the spontaneous movements were fundamental. Hardly a single one of them could be considered accessory to any other movement. They were the swaying of the trunk, the movement of the jaw, the swing of the arm, the rolling of the head, or the simplest finger movements.

In the willed movements, the difference between the control of the fundamental and of the accessory muscles was much more marked in the feeble-minded than in normal children. This was the more noticeable the greater the degree of idiocy. Some who could execute gross movements with regularity and control were wholly deficient in the execution of finer movements. Even those who walked strongly were utterly devoid of the grace which results from a well developed sense of muscular coördination and control. Nothing is more striking than the clumsy awkwardness of idiots. Sometimes where the control of the fundamental had been nearly perfected, there seemed a positive gap, as if the accessory had not developed. As an illustration, the case of K. A., the waltzer, whose control of fingers was very deficient, is interesting.

In the higher grade cases the difference was not so marked. The arm swing and finger movement tests previously mentioned were made with those children who were nearest the normal, but here the difference is noteworthy. The ratio of arm swings to finger movements in the adult male was found to be 100 :128 ; in the normal boy of 13.6 years, 100 :93.6 ; in the feeble-minded boy of 13.6 years, 100 :81.

In general the observations fit nicely with what we should naturally expect if the idiot be in a state of arrested development. They also show the interdependence of thought and muscular control ; as muscular control increased, the power of attention and the general intelligence increased.

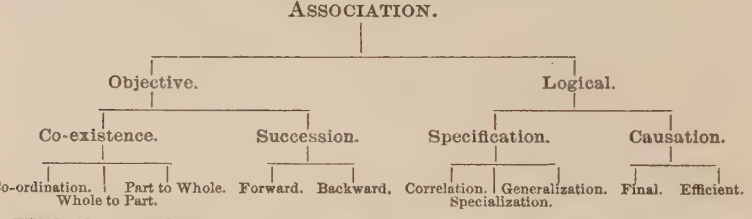
## Mental Association of the Feeble-Minded.

To determine the rapidity of the mental association of the feeble-minded, and, if possible, to discover something of their association habits, the following test was made: A key word was given them, and thirty seconds were allowed for writing the words which came to the mind. The number of seconds divided by the number of words written gives the average association time. The words used as starters were the concrete nouns: house, tree, chair, ship, clock, Fourth of July.

The written tests could be made only with the most intelligent children. Fifteen children, with an average age of 15.8 years, gave an average association time of 8.3 seconds. Cattell and Bryant,[1] with the same words, excepting the last, obtained from normals an average of 4.5 seconds. Thirty children, average age 13.3 years, were tested orally. Relieved of the writing, the association time was much quicker. The method employed was the same as in the first case,—the key word was given, and thirty seconds were allowed for the associations, each word being written by the experimenter as soon as spoken. The average time obtained for the thirty children was 5.35. The slowest average time for any one child was 10.7, the quickest 2.7 seconds.

Ten boys, normal, were tested in a similar manner. The average time obtained was 2.61 seconds, the slowest time for any one boy being 3.47 seconds, the quickest 2.06 seconds.

Cattell and Bryant, in considering the results of their experiments, made the following classification of associations:




With the word house, in 464 associations, they obtained 103 cases of coördination (as furniture), 22% of the whole number of associations; 190 of whole-to-part (room), 41%; 8 part-to-whole (street), 2%; 25 forward (-maid), 5%; 1 backward (glass-); 18 correlation (cottage), 4%; 41 specialization (tall), 9%; 15 generalization (buildings), 3%; 16 end (home), 3%; 44 means (wood), 9%; unclassified, 3%.

Put in tabular form, we have:

| | | | |
|---|---|---|---|
| I. *Objective* | 70% (about) | II. *Logical* | 29% (about) |
| 1. Co-existence | 65% | 1. Specification | 16% |
| Coördination | 22% | Correlation | 4% |
| Whole-to-part | 41% | Specialization | 9% |
| Part-to-whole | 2% | Generalization | 3% |
| 2. Succession | 5% | 2. Causation | 12% |
| Forward | 5% | End | 3% |
| Backward | ⅕% | Means | 9% |
| | | Unclassified | ⅔% |

With the word house the feeble-minded gave the following percentages:

[1] *Mind*, 1889, p. 235.

| | | | |
|---|---|---|---|
| I. *Objective* | 84% (about) | II. *Logical* | 16% (about) |
| 1. Co-existence | 83% | 1. Specification | 13% |
| Coördination | 52% | Correlation | 12% |
| Whole-to-part | 29% | Specialization | 0% |
| Part-to-whole | 1% | Generalization | 1% |
| 2. Succession | 1% | 2. Causation | 4% |
| Forward | ½% | End | 3% |
| Backward | ½% | Means | ⅔% |
| | | Unclassified | 1½% |

A comparison of the tables shows a much greater tendency upon the part of the feeble-minded to make simple objective associations. This tendency was even more striking in the case of the other words used. (The comparatively large number of correlations with the word house is due to the peculiar environment of the children tested. For example, the word dormitory was frequently given.) On the other hand, it is interesting to note that the feeble-minded range through the whole field of association. In general we may say the characteristics of their association habit are simple objectivity and great slowness. It appears as if the children visualized the objects mentioned and named the parts. With the word tree, nearly two-thirds of the associations came under the head of whole-to-part. The following are some of the lists obtained:

House: building, table, clock, watch, lights, pictures, wall, plants, windows.

Tree: limbs, roots, branches, blossoms, apples, pears, bark.

Ship: sails, sail on water, bow, steer.

Chair: legs, back, rounds, two legs, book.

Fourth of July: ice cream, lemonade, doughnuts, dishes, tent.

The association is less apparent in some lists; for example, house: plow, horse, build, garden, school. The boy who gave this list also gave for Fourth of July, fire-crackers, torpedoes, fun, good time; and for clock, tell time, fix it, wind.

Compared with Cattell's and Bryant's results, the number of associations which could not be classified was very large, but the degree to which many of the children held to the train of thought awakened by the key-word was a matter of surprise. Moreover it must be borne in mind that two ideas which may appear wholly unassociated to the experimenter may be closely associated in the mind of the subject.

A few trials were made in obtaining single associations. Some of these are interesting, especially so in showing the tendency to objectify abstract ideas when given. The key-word is given first, then the association made and the time.

Time, bell, 14s.; beauty, dresses, 22½s.; love, horse, 21s.; supper, milk, 3s.; congress, law, 5s.; goodness, behavior, 11s.; love, sweets, 5s.; beauty, pure, 7s.; sickness, measles, 5s.; number, one, 9½s.

The average association time of these children, as has been said, is strikingly slow, about double the time of normal children. Moreover one factor may enter here which would tend to slow the association time of normal persons, but not of the feeble-minded, *i. e.*, the factor of inhibition. A normal person in making an association word-list can not overcome fully the tendency to pass judgment upon the relevancy of the idea before he expresses it. Many of the associations of the feeble-minded seem to show that there is little or no tendency to inhibit an idea apparently unassociated. Hence the real difference between the association times of normal and feeble-minded persons may be greater than appears from experiment. The association tracts that are

traversed like a flash in the normal mind, with these children seem to be "wormed" out. Their mental association process "crawls;" it cannot leap, or if it does, it leaps in the wrong direction, and the result is incongruous. Hence the quick but silly and wholly irrelevant answers sometimes given by these children.

The teacher of the feeble-minded may be able to gather a few suggestions from what has been said that will be of service. What is the office of instruction but to present the proper stimuli and to direct the association of the mental impressions resulting from those stimuli with each other and with others previously received? More carefulness, more tact, more real teaching are needed here than with normal children, or with the deaf or the blind. The child who hears well, who sees well, who has good general sensibility and fair memory, as many of these children have, may show as his main defect an ability to form associations. Mental associations which form spontaneously in the mind of the normal child, are often impossible to the mind of a defective without the aid of most careful, painstaking, and judicious instruction. Associations are noticed very early in the normal infant. Darwin says: "The facility with which associated ideas * * * were acquired seemed to me by far the most strongly marked of all the distinctions between the mind of an infant and that of the cleverest full-grown dog I ever saw."[1] Children of six months have been observed to understand when their hats and cloaks were put on that they were to be taken out. Some idiots do not make this association even after months and years of repetition, and some never associate hunger and thirst and its alleviation with food, so that bread and water placed in sight and reach would not save them from starvation.

The feeble-minded cannot of themselves fill up the gaps in instruction that are filled naturally and perfectly by the normal child. The shortest conceivable step may be impossible to them without guidance. Every lesson, and every step in the lesson, must be undertaken with the thought of the association habit of each child, its difficulty, its slowness, its imperfection fully in the teacher's mind. That the association habit may be improved by proper attention is evident to all. It is said that Mr. Thring, the eminent English educator, ascribed to Pick's method of mnemonics a great improvement in his own power of thought. The fact doubtless was that a better habit of association had opened up to him a new mental horizon. If such a man can be so greatly helped by attention to habits of mental association, there is good reason to believe that a most careful consideration of this point is due the feeble-minded child from his teacher. Of all children he most needs to be led into good habits of association.

## Miscellaneous Suggestions.

Suggestions from an outsider to those who are engaged in a special line of work often have their greatest value in this, that they came from one who views the work from a different standpoint. All the suggestions offered by the writer in this work are given with the above thought in mind, and simply for what they may be worth.

Speaking entirely from a theoretical standpoint, the phonetic method of teaching reading should be used with many of these

[1] "Biographical Sketch of an Infant," *Mind*, Vol. II, p. 285. Quoted by Tracy in "Psychology of Childhood," p. 69.

children. Many of them are decidedly ear-minded, and this should be taken account of in the reading lessons. The word method taxes greatly the visual memory, and requires the very difcult immediate association of a visual image (of the written word) and an auditory image (of the spoken word) in each case. These associations are rendered mediate and much simpler by the phonic method, and the visual-to-auditory image associations (so difficult to an ear-minded imbecile) necessary in reading are greatly lessened in number. The phonic drill is most excellent in developing clearness of articulation. In the report of the Connecticut Board of Education, 1894-1895, will be found excellent suggestions on the phonic method of teaching reading.

Reading, simply as an accomplishment, should not be taught the feeble-minded. If use will be made of reading during life, if reading can and will be continued voluntarily in some slight degree at least, well and good; but if it will be abandoned after the school days are over, the energy is misspent. Reading and writing came late in human culture, and it demands a high degree of intelligence to make reading and writing anything more than an accomplishment. Reading and writing are tasks as unsuited to a feeble mind as precise work is to baby fingers. It is far better to give the time to sewing, to housework, to cobbling, to farm work, and the thousand and one other useful things. Parents of feeble-minded children ought to see that there is nothing else so desirable as the ability to do useful work. Literary knowledge, if it does not come at the right stage of intelligence, is weakening rather than strengthening to the mental power, a hard, unnatural, indigestible food for a feeble mind. Many kinds of common work have infinitely more use than schoolroom accomplishments, and develop more real intelligence in the feeble-minded. "Not what he knows, but what he can do," is doubly applicable to these children. Parents should be impressed with the truth that a man should be measured by his usefulness and not by his knowledge. There is an idiocy of the hand and arm that is far worse than utter lack of book knowledge.

In conducting exercises in "sensorial gymnastics," Seguin's principle, that each sense must be trained both as a function and a faculty, should always be borne in mind. While laying great stress upon the training of each sense as a function, equal effort should be made to develop the sense as a faculty. Upon the development of the senses as functions depends their development as faculties, but the more difficult task in the teaching of the feeble-minded is the proper training of the senses as faculties. The *raison d'être* of sensation is the production of thought, and if it be true that the psychic life of an idiot is prone to stop at sensation, that his deficiency is greatest in the power to transform physiological into intellectual elements, it is this second feature of sensorial gymnastics that requires the more constant thought of the teacher. Great good judgment is necessary for determining to just what extent the intellectual element should be brought out in each exercise, but so far as it can be determined, it should never be neglected.

While the relation of muscular movement to thought is now so universally recognized and considered, it seems almost superfluous to add a word upon the importance of motor training. Every teacher of the feeble-minded recognizes that above the training of the senses, above school work, above everything else in importance comes motor ability. But the great principle in the motor training of the feeble-minded must be insisted upon over and over,

—namely, that the chief aim is to enable the child to execute ideas, to make purposive movements for reasons of his own. Imitative movements, movements at command, are all important in their place, but the end of motor training is to get these children to make movements in accordance with some ideal formed in their own minds. The child who desires something and will climb to obtain it has accomplished much more than he who imitates a movement or changes his position at command. Hence the value of games, in which the happy child, alive to some clear, definite ideal in its own mind, moves in execution of its own thought. There is no higher motor training than this for a child. When these child ideals have become the serious, world-needed ideals of useful maturity, the object of motor ability has realized its perfection. Useful creative work is at once the means and the end to the highest motor culture.

Besides the various exercises of smelling, tasting, sorting and handling blocks, etc., very useful exercises can be devised for the discrimination in touch. A delightful and most valuable training for these children, it seems to the writer, is the handling, (smelling too, and tasting), blindfolded and seeing, of different kinds of fruit—apples, oranges, pears, grapes, bananas, lemons, etc., etc. And how easy to determine a natural reward! These exercises can be extended to different kinds of fur which children delight to stroke, as that of the cat, dog, buffalo, beaver, etc.; different kinds of cloth—flannel, velvet, silk, calico, etc.; grains, meals, nuts, minerals, etc. But it should always be borne in mind that the ultimate aim of such exercises is to train the child to acquire knowledge from sensations.[1]

### Games for the Feeble-Minded.

No one who has ever studied children can doubt the great educational value of play. Feeble-minded children do not play, or if they do, the play is of the very simplest kind, perhaps with blocks, a stick, or some simple toy. There is no plan in their play. They do not make mud pies, build little dams, dress dolls, or shout out in eagerness for "I Spy," "London Bridge" and "Puss in the Corner." The coördination of muscular movements, the quickness of thought, the idealization necessary in many games of children, are far beyond a feeble-minded child. Teachers of these children have naturally reduced much of their school instruction to the form of games, and with great advantage. But it seems to the writer that there is a great field yet untried in games for feeble-minded children. If a keen interest for games, a real play enthusiasm could be awakened in these children, it would be of the greatest value. Tell me that one of these boys can play a good game of jack-stones, or that he is skillful at base-ball, and I would rather hear it than that he can name all the states of the Union and locate their capitals. The power of thinking quickly, judging, acting, controlling, willing (needed above all things by these children), is necessary for playing certain games, and can find a better field for development here than in any other exercise ever mentioned in a school course. I believe it is not impossible to awaken and develop to a much greater degree than has yet been done the play instinct of feeble-minded children. I have seen much enthusiasm manifested on the play-ground at the Massachusetts School for the Feeble-Minded at Waltham, where much is being done in active games.

[1]Similar exercises have been devised by Dr. Fernald at the Massachusetts School for the Feeble-Minded.

The play instinct is one of the deepest and most fundamental of the instincts of normal children, and we can go far down the scale of mankind and animals and see that it still holds equally there in the young. It may be that here will be found one of the surest and easiest roads to the development of the powers of feeble-minded children. But to know a game is not to be able to teach it, and no greater tact was ever required of a teacher than that necessary for developing the play side of the feeble-minded child's nature. Many games of the school room are not games at all in the true sense, but are really formal exercises, though perhaps rather interesting in comparison to the usual class work. It requires consummate art in the teacher to direct perfectly the games of children.

The following list of games,[1] although some of them may not now be well adapted to feeble-minded children, may offer useful suggestions to the teacher. It is regretted to the writer that no study has yet been made of the development of play in normal infants. Many very valuable facts might be gathered from such a study for the benefit of teachers of the feeble-minded. In this respect, and also in regard to toys and to play (apart from games), this list is deficient.

### Games Which Develop the Power of Attention.

*Return or String Ball.* A rubber ball attached to an elastic. The elastic is fastened to the middle finger of the right hand and the ball is thrown, returning by force of the elastic.

*Rounds.*

*Catch Ball.* Use soft ball. Children stand in rows or in circle. Alternate rolling, tossing with right hand, left hand, both hands. Opposite player catches and returns or passes the ball on in same manner. Game may be greatly varied.

*Cat and Mouse.* "Mouse" inside, "cat" outside the circle. Children circle round, hindering with lowered arms the cat from getting in or out, but with raised arms allowing the mouse to pass freely out or in.

*Birds Fly.* Leader cries "fly," naming any bird or animal, at same time holding up hands. Others hold up hands only in case a flying bird is mentioned. Who misses is out.

*Follow My Leader.*

*Intery Mintery.* All place forefinger on leader's knee. Leader repeats a counting rhyme, touching a forefinger at each syllable. The finger upon which the last syllable falls must be instantly withdrawn or it will receive a rap.

*Come with Me.* Children stand in a circle. One runs around the circle (as in Drop the Handkerchief) and touches someone on the back, saying, "Come with me." The two run in opposite directions. Upon meeting, they take hold of hands, swing once around, and then race for the vacant place.

*Circle Ball.* Passing ball quickly around circle, handing to next or tossing.

*Balloon Ball.* Use light, large rubber ball. Alternate rolling, tossing, throwing, kicking, right hand, left hand, both hands. Vary.

*Bird Catcher.* Children sit in circle. One stands within the circle. Each takes the name of some bird. Teacher or leader tells or reads story, bringing in the names of the birds. At the mention of her name, one must raise hands and bring them down quickly.

[1] See an article by the writer on "Education by Plays and Games," PED. SEM., Vol. III, No. 1.

At mention of owl, all place hands behind back, holding them there until another bird is mentioned. The catcher endeavors to catch a hand whenever one is moved.

*Balloon Ball.* Same as above. Also keep ball in the air by batting upward with the hand until a miss is made, or keep bounding it by batting it downward against the floor. Alternate hands.

*Simon Says, Thumbs Up.*

*Fisherman.* Tie string to a stick and make slip-loop at other end. Loop is placed in centre of table. At words "Your fish," each must put finger in the loop. At words "My fish," finger must be quickly withdrawn, or sudden jerk will snare them.

*School Ball.* Use soft ball. Count out for turns. No. 1 retains ball so long as he can catch it in accord with the rules. When he misses he must step five paces away and let No. 2 throw ball at his back. If No. 2 misses he loses his turn and gives ball to No. 3, who proceeds as No. 1. 1. Throw up with one hand, catch with both. 2. Throw with both and catch with both. 3. Throw with both, catch with one. 4. Throw with one and catch with other. 5. Throw to ground and catch on bounce, in the different ways. 6. Bat upward before catching. 7. Throw upward, and, before catching, (a) clap hands, (b) bow once, (c) kneel once, (d) jump in the air, (e) jump forward, (f) jump backward, (g) kneel to right, (h) kneel to left.

*Days of the Week.* Each takes the name of some day. One throws against the wall and calls out Monday or some other day. The one representing the day catches the ball. If he misses, others must scamper away before he has time to throw the ball and hit one of them. Who misses or is hit loses a point.

*Genteel Lady.* One says to a neighbor, "Good-morning, genteel lady, always genteel: I, a genteel lady, always genteel, come from that genteel lady (pointing), always genteel, to tell you that she has a bird" (or anything you like). The one addressed repeats exactly and adds something else about the bird, and so on.

*Buzz.* Count around circle. Buzz is always substituted for some chosen number and its multiples. For example, 1, 2, 3, 4, buzz, 6, 7, 8, 9, buzz, etc.

*Railroad Game.* Each takes name with something associated with railroad. One relates story. At mention of rails, "Rails" must rise and extend arms in front. At mention of newsboy, "Newsboy" must call out his papers, etc., etc.

*Corn and Beans.* Large number of cards with questions in arithmetic, geography, history, or whatever you like, written on them. Same number of cards with answers. Leader reads question. Who holds the answer must cry "corn." The others cry "Beans." If one cries "Corn" correctly before anyone cries "Beans," he scores a point. Corn and beans may be used as counters.

*Shot-bag Jumping.*

### Games Which Train the Observation.

*I Spy.*

*Blank and Ladder.* I Spy by sides.

*Hide in Sight.* Hide something in room, but so that it is not entirely concealed if one looks sharply from all points of view.

*Alphabet Games.* Explained under reading.

*Hide the Handkerchief.* Handkerchief hidden in the room to be found.

*Magical Music.* Like Hide the Handkerchief or Hide the Thimble. Teacher plays the piano loudly or softly as a hunter nears the object.

*Parts.* Naming different parts of an object, as of a house, book, table, etc., without giving letter. Play as above.

*Naughts and Crosses.* Tit-tat-to.

*Sliced Maps.*

*Dominoes.* Simpler games.

*Touch Wood, Touch Iron.* A tag game.

*Identification.* Several children conceal all but eyes behind curtain or mask, or conceal all but part of face or hand. The others guess who each one is.

*Stealing Sticks.* Sticks are scattered about "keeper's ring." Children watch opportunity to steal a stick without being caught.

*Parchesi.* And other games similar.

*Buried Words.* "Somewhat back from the village street, stands an old-fashioned country seat." Find a body of water and a country dwelling. Ans., Sea and Villa. Fruit, flowers and animals are good words to conceal.

*Loto.*

*Observation.* Players pass around table or desk upon which are numerous articles. They then endeavor to write a list of all the articles.

*Dictionary.* Making all words possible out of the letters of a large word.

*Backgammon.*

*Fox and Geese.*

### Physical Training.

*Rounds. Return Ball. Catch Ball. Cat and Mouse.*

*Sail the Ship.* Two or four, two by two, take hold of hands and swing swiftly around.

*Cushion Dance.* All form a circle about a cushion, taking hold of hands. Each tries to pull some one against the cushion.

*Honey Pots.* Select honey merchant and purchaser. Rest squat with hands clasped under knees. Two larger children take each pot by the arms and swing it. If the honey pot breaks its hold, it is poor honey.

*London Bridge.* Ending in tug-of-war.

*Brownie Ten Pins.*

*Rounds. Sail the Ship. Squat Tag. Racing. Philander's March.* March to singing or music around the room, through the halls, up stairs and down stairs.

*Here I Brew and Here I Bake.* Young child's game of Bull in the Ring.

*Hunt the Fox.* Children stand in rows by couples. The fox and the hunter at the head start and run down, in and out the lines, the hunter pursuing the fox; when the fox is caught, they take their places at the foot.

*Hawk and Chickens.* One is a hawk or witch, another a hen, and the rest are chickens. A chase game.

*Darby Jig.* Hopping dance. Children grasp hands under knees, and describe triangles and squares on the floor to the music.

*Bean Bags. Faba Gaba.*

*Hunt the Ring.* Ring slipped along circular rope under the hands of the children quickly. One in the centre tries to discover the ring.

*Ring Toss.*

*Duck on a Rock.* Each has a stone. One places his stone as a duck upon a block or rock. Others stand at a line and throw at the duck. Whoever is tagged by the "tender" before he can return to

the line after picking up his stone must be "tender." The "tender" cannot tag when his duck is off the rock.

*Bull in the Ring.* Players form a circle with one in the centre, who tries to break through the ring.

*Jack-stones. Marbles. Walking on Stilts.*

*Cock Fighting.* Boys squat grasping hands under knees, then hop at each other, trying to upset one another.

*King's Castle.* King takes possession of a castle. Others by fair pulls and pushes try to take possession of his realm.

*Baste the Bear.* Bear has a ring marked on the ground. Others with knotted handkerchiefs attempt to beat the bear. The bear springs after them, but cannot leave the circle.

*Hop Scotch. Jumping Rope.*

*Hopping Bases.* King in the centre between two bases. Whoever leaves a base must hop to opposite base. The king can pursue only by hopping.

*Fox and Geese.* Tag game. Fox and geese run in marked out paths.

*Cross Tag.*

*Bound Hands.* A game of tag. Goals at opposite ends of playground. Players run from one to the other at a signal from catcher. When one is caught he joins hands with catcher, and they chase hand in hand. Each one caught joins the line.

*Snap the Whip.* Players take hold of hands, forming a long line, and run rapidly. Leader suddenly stops, and the line is drawn up with a jerk, requiring much strength to keep from letting go of hands.

*Fungo.* One bats "flies." When one of the others catches three flies, he takes his turn at batting.

*Wicket.* One bowls at a wicket, the other guards. Several may play.

*Tug-of-War. Wrestling.*

*Battle for the Banner.* Two sides with captains. One has possession of a part of the playground, best a hillock, and floats a banner. The other side strives to get possession of the banner.

*Buck, Buck.* One places his head against a wall, another mounts his back and holds up certain number of fingers, saying: "Buck, Buck, how many fingers do I hold up?" If the "Buck" guesses correctly, the other becomes "buck."

*Hunting Tag.* Hunter and rabbits. Hunter tags rabbit three times and rabbit becomes a hound. Hound can catch and hold a rabbit, but hunter must come and tag.

*Base Ball.*

*Pitch Stones.* Two boys alternate in pitching stones at one another's.

*Giant Stride.* From a high thick pole are suspended ropes reaching to the ground. These are fastened so as to turn around the top of the pole. Players grasp their ropes and run around, swing, jump, vault, etc.

*Foot Ball.* American game.

*Leap Frog. Jumping.*

*Twisting Sticks.* Two grasp a round stick and raise it over their heads. Then the stick is brought down below their waists. The sticks must turn in the hands of one.

*Pulling Sticks. Hand Wrestle. Walking Chair.*

*Knights.* The knights ride upon the shoulders of other boys and attempt to unseat each other.

*Leap Frog. Base Ball. Quoits. Putting Stone. Throwing Pole. Prisoner's Base. Jumping.*

### Paraphernalia of the Play-Ground.[1]

A very important feature of an institution should be the paraphernalia of the play-ground. The play-grounds for feeble-minded children should have :

1. Swings. 2. Teeters. 3. Sand-piles, with toy shovels, rakes, pans, carts, etc. 4. Circular walk (on the boys' ground large enough for racing). 5. Fox and Geese Track. 6. Giant Swing. 7. Base-ball Diamond. 8. Foot-ball Goals. 9. Roll Hoops, with sticks. 10. Balance Beams. These are made of one-inch planks, set edgewise upon the ground and fastened with brackets or pegs. The height may be increased by setting blocks under the ends. Several may be placed parallel if desired. The children walk along these beams holding hands or alone. 11. Quoit Pegs and Quoits. 12. Stake and Rings for Ring-toss. 13. Spring-board. Children should spring into dry, clean sand, or a space sufficiently large may be dug out and filled in with sawdust or tan bark. 14. Sand-bags. 15. Jumping Pole, a pole of seven or eight feet long, about 1¾ inches thick, tapering a little at each end. 16. Push-pole, a pole of hard wood, 8 feet long, 1½ inches thick ; also broom handles for pulling sticks, stick push, etc. 17. Bean-bags, with Faba Gaba board. 18. Jumping Standards, with string and weights. 19. Stilts. 20. Tug-of-War Rope. 21. Medicine-Ball. 22. Jump-ropes.

In closing I desire to express my obligation to Prof. Sanford and Prof. Hodge for aid and suggestions given me, and especially to President Hall and Dr. Burnham for their continual help, kindly direction and encouragement. I am under great obligation to Dr. Burnham also, for his most painstaking examination and valuable criticism of my manuscript. I am much indebted, likewise, to Supt. Walter E. Fernald of the Massachusetts School for the Feeble-Minded at Waltham, for timely criticism and for affording me every facility in his power in my study of the children under his charge. I desire also to express my thanks to the teachers, matrons and attendants of the same institution who kindly assisted me in my observations and experiments.

---

[1]See "Physical Exercises of the Play-ground," by Carl Betz, Chicago, 1894. Also Cyclopædia of Games and Sports, by Champlin and Bostwick, New York, 1890.

# A LIST OF THE INSTITUTIONS FOR THE FEEBLE-MINDED.

## UNITED STATES.

| Post Office. | Name. | Superintendent or Principal. | Instructors. | | | | Pupils. | | | | Industrial Department. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Male. | Female. | Industrial Department. | Assts. caring for Inmates. | Male. | Female. | Kindergarten | Music. | Woodworking | Metalworking | Farming and Gardening. | Shoemaking. | Tailoring. | Sewing. | Housework. | Other Trades. |
| Glen Ellen, Cal., | California Home for the Care and Training of Feeble-Minded Children, | A. E. Osborne, M. D., Ph. D., | 0 | 4 | 8 | 11 | 130 | 115 | (a) | 20 | .... | .... | 5 | 4 | .... | .... | | 31 |
| Lakeville, Conn., | Connecticut School for Imbeciles, | Geo. W. Knight, M. D., | .... | 3 | .... | 12 | 84 | 57 | 39 | 28 | .... | .... | .... | .... | .... | .... | .... | .... |
| Lincoln, Ill., | Illinois Asylum for Feeble-Minded Children,* | Dr. William B. Fish, | 2 | 9 | .... | 34 | 243 | 197 | 58 | 34 | .... | .... | 30 | .... | .... | 74 | .... | 21 |
| Fort Wayne, Ind., | Indiana School for Feeble-Minded Youth,† | John G. Blake, | 3 | 12 | 8 | 15 | 225 | 161 | 39 | 14 | 3 | 2 | .... | 8 | 4 | 8 | .... | 4 |
| Glenwood, Iowa, | Iowa Institution for Feeble-Minded Children, | F. M. Powell, | 1 | 12 | .... | 17 | 308 | 205 | 20 | 23 | .... | .... | 20 | 3 | .... | .... | 30 | 27 |
| Winfield, Kans., | State School for Idiotic and Imbecile Youth.† | C. R. Wiles, | .... | 3 | 26 | 6 | 59 | 44 | 21 | 34 | .... | .... | .... | 14 | ... | 12 | .... | .... |
| Frankfort, Ky., | Kentucky Institution for the Education and Training of Feeble-Minded Children, | John Q. A. Stewart, M. D., | 3 | 5 | .... | 6 | 87 | 77 | 20 | 150 | .... | .... | .... | 30 | .... | 29 | 33 | 28 |
| Waverley, Mass., | Massachusetts School for the Feeble-Minded. | Walter E. Fernald, M. D., superintendent, | 1 | 6 | 7 | 38 | 184 | 148 | 32 | 52 | .... | .... | .... | .... | .... | .... | .... | .... |
| Faribault, Minn., | Minnesota School for Feeble-Minded, | Arthur C. Rodgers, M. D., superintendent, | 3 | 9 | 2 | 52 | 179 | 179 | 23 | 46 | 3 | 4 | .... | .... | 4 | 154 | .... | 148 |
| Beatrice, Neb., | Nebraska Institution for Feeble-Minded Youth,† | J. T. Armstrong, | 1 | 4 | 2 | 9 | 95 | 51 | .... | 0 | .... | .... | .... | .... | .... | .... | .... | .... |
| Vineland, N. J., | New Jersey Home for the Education and Care of Feeble-Minded Children, | S. Olin Garrison, superintendent, | 2 | 7 | 3 | .... | 127 | 46 | 21 | 9 | 13 | .... | .... | 10 | .... | 30 | 40 | 36 |
| do., | New Jersey State Institution for Feeble-Minded Women, | Mary J. Dunlap, M. D., | .... | .... | 4 | 3 | .... | 61 | .... | 3 | .... | .... | .... | .... | .... | .... | .... | .... |
| Newark, N. J., | Custodial Asylum for Feeble-Minded Women, | W. L. Willett, superintendent, | 5 | 43 | 17 | 31 | .... | 352 | 0 | 40 | .... | .... | .... | .... | .... | 60 | .... | .... |
| New York, N. Y., | School for Feeble-Minded, | M. C. Dunphy, superintendent, | 0 | 3 | 6 | 5 | 104 | 53 | 35 | 0 | .... | 15 | 28 | 3 | 3 | 28 | 20 | 6 |
| Syracuse, N. Y., | Syracuse State Institution for Feeble-Minded Children, | James C. Carson, M. D., superintendent, | 1 | 10 | 11 | 95 | 275 | 266 | 32 | 20 | 2 | .... | .... | 6 | 5 | 107 | 84 | 3 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Columbus, Ohio, | Ohio Institution for Feeble-Minded Youth, | G. A. Doren, M. D., superintendent, | 1 | 21 | 9 | 38 | 577 | 352 | .... | 242 | 4 | .... | 40 | 11 | 15 | 18 | 46 | 18 |
| Elwyn, Pa., | Pennsylvania Training School for Feeble-Minded Children, | Isaac N. Kerlin, M. D., | 1 | 25 | .... | .... | 535 | 347 | 80 | 52 | 10 | .... | 12 | 8 | 7 | 20 | 25 | 4 |
| Vancouver, Wash. | Washington School for Defective Youth, *b* | James Watson, | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |

Owing's Mills, Maryland Asylum and Training School for the Feeble-Minded.

*From 1889-90. †From 1890-91. *a*All school grade cases. *b*Not yet organised.

| Post Office. | Name. | Superintendent or Principal. | Instructors. | | | | Pupils. | | | | Industrial Dep't. | | | | Vols. in Library. | Val. of Grounds and Buildings. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Male. | Female. | Industrial Department. | Assts. caring for Inmates. | Male. | Female. | Kindergarten | Music. | Woodworking | Farming and Gardening. | Sewing. | Other Trades. | | |
| Ellicott City, Md., | Font Hill Private Institution for the Feeble-Minded and Epileptic Children, | Samuel J. Fort, M. D., | 2 | 2 | .... | 3 | 26 | 4 | 12 | 7 | .... | 6 | .... | .... | 400 | $15,000 |
| Amherst, Mass., | Home School for Nervous and Delicate Children, | Mrs. W. D. Herrick, | 1 | 3 | .... | 4 | 12 | 4 | .... | .... | .... | .... | .... | .... | ..... | ..... |
| Barre, Mass., | Private Institution for the Education of Feeble-Minded Youth, | Geo. Brown, M. D., | 1 | 4 | 12 | 15 | 40 | 15 | 8 | 31 | .... | .... | .... | .... | ..... | ..... |
| Fayville, Mass., | Hillside School, | Mmes. Knight & Green, | .... | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 500 | ..... |
| Kalamazoo, Mich., | Wilbur School and Home for the Feeble-Minded, | C. T. Wilbur, M. A., M. D., | .... | 2 | .... | 4 | 22 | 13 | 35 | 35 | .... | .... | .... | .... | 2,000 | 50,000 |
| Cranbury, N. J., | Private Home and School for the Feeble in Mind, | Rev. C. F. Garrison, | 2 | 2 | 2 | 1 | 5 | 8 | 5 | .... | 3 | 3 | .... | .... | 500 | 18,000 |
| Haddonfield, N. J., | Haddonfield Training School for Feeble-Minded and Backward Children, | Margaret Bancroft, Jean Weir Cox, | .... | 2 | 6 | 2 | 2 | 13 | 8 | 3 | 2 | 1 | 8 | 45 | 400 | 25,000 |
| Amityville, N. Y., | Brunswick Home School, | Mrs. O. F. Brown, | .... | .... | .... | .... | .... | .... | .... | 28 | .... | .... | .... | .... | ..... | ..... |
| New York (325 West 38th street), N. Y., | Seguin Physiological School for Children of Arrested Development, | Mrs. Elsie M. Seguin, | .... | 7 | 12 | 3 | 11 | 5 | 6 | .... | 9 | .... | 3 | .... | ..... | ..... |

*Report of the Commissioner of Education, 1891-92. Vol. II.

For more recent, but not as detailed statistics, see "History of the Treatment of the Feeble-Minded," by Dr. W. E. Fernald, Boston, 1893.

## GREAT BRITAIN AND IRELAND.[1]

| For Pauper Children. | Founded. | No. of Inmates. Male. | Female. | Total. |
|---|---|---|---|---|
| 1. Darenth Schools, Dartford, Kent, | 1875 | 590 | 557 | 1147 |
| 2. Northampton County Asylum, Berrywood, | | | | |
| 3. Western Counties Idiot Asylum, Starcross, Devon, | | | | |
| **For Children Above Pauper Class.** | | | | |
| *I. Charitable Institutions, Receiving, also, Paying Cases.* | | | | |
| 1. Earlswood Asylum, Red Hill, Surrey, | 1847 | 383 | 188 | 571 |
| 2. Royal Albert Asylum and Brunton House Branch, Lancaster, | 1864 | 379 | 172 | 551 |
| 3. Eastern Counties Asylum, Colchester, | 1859 | 162 | 73 | 235 |
| 4. Western Counties Idiot Asylum, Starcross, | 1864 | 132 | 77 | 209 |
| 5. Midland Counties Idiot Asylum, Birmingham, | 1868 | 26 | 23 | 49 |
| 6. Magdalen Hospital, Bath, | 1846 | | | |
| 7. Scottish National Institution for the Education of Imbecile Children, Larbert, Stirlingshire, | | | | |
| 8. Baldovan Asylum for Imbecile Children, near Dundee, | | | | |
| 9. Stewart Institution for Idiotic and Imbecile Children, Palmerston, Dublin, | 1869 | 35 | 22 | 57 |

*II. Private Establishments.*

1. Normansfield, Hampton Wick, Middlesex.
2. Downside Lodge, Chilcompton, Bath.

### Establishments for Feeble-Minded Persons and Mentally-Feeble Children.

*I. For Feeble-Minded Adolescent Girls.*

1. Scott House, The Triangle, Hitchin.
2. The Aubert Park Home, 48 Highbury Park, N.
3. The Laundry and Homes of Industry, Burnt Green, nr. Birmingh'm
4. Chasefield, Fishponds, Bristol.
5. St. Mary's Home, Painswick, Gloucestershire.
6. Adcote, Pilch Lane, Knotty Ash, Liverpool.

*II. Private Educational Homes for Backward and Mentally-Feeble Children.*

1. Ancaster House, Richmond Hill, Surrey.
2. Bearsted House, near Maidstone, Kent.
3. Grosvenor, Auckland Road, Upper Norwood.
4. Mavisbush, Poulton, Midlothian, N. B.
5. Winchester House, Kingston Hill, Surrey.

### School-Board Classes for Special Instruction of Feeble-Minded Children, London Centres and Schools.

(First Class Opened July, 1892.)

Chelsea, Park Walk, St. Dunstan's Road.
Clerkenwell, Chequer Alley.
Finsbury, Bath Street, Hugh Myddleton, Edward Street.
Hackney, Maidstone Street, Newcastle Street, Summerfield Street.
Lambeth, East, Danby Street, Sayer Street.
Southwark, Snowfields, Pocock Street.
Tower Hamlets, British Street, Broad Street.
Leicester (first class opened April, 1892).
Birmingham (first class opened 1894).
Brighton (first class opened 1895).

[1]"Mentally-Deficient Children." By G. E. Shuttleworth, London, 1895.

| Institutions which Admit Feeble-Minded Children. | Male. | Female. | Total. |
|---|---|---|---|
| Ain. Asile Saint-Georges, | 11 | ..... | 11 |
| Ain. Asile de Sainte-Madeline, | ..... | 4 | 4 |
| Aisne. Hospice départmental et dépôt de mendicité de Montreuil-Sous-Laon, | 20 | 16 | 36 |
| Aisne. Asile de Prémontré, | 6 | 8 | 14 |
| Allier. Asile Ste-Catherine, | 2 | 3 | 5 |
| Alpes-Maritimes. Asile (Privé) de Saint-Pons, | ..... | ..... | 9 |
| Ardèche. L'asile de Privas, | 8 | 2 | 10 |
| Ariège. Asile de Saint-Lizier, | ..... | ..... | ..... |
| Aude. Asile de Limoux, | 3 | 1 | 4 |
| Aveyron. Asile de Rodez, | 3 | 3 | |
| Calvados. Asile du Bon-Sauveur de Caen, | 45 | 80 | 125 |
| Cantal. Quartier d'Hospice à Aurillac. | ..... | ..... | ..... |
| Charente. Asile de Breuty-la-Couronne, | 3 | 2 | 5 |
| Charente-Inférieure. Asile de Lafond à la Rochelle, | ..... | ..... | ..... |
| Cher. Asile de Beauregard, | 2 | 1 | 3 |
| Corrèze. Asile de la Cellette, | ..... | ..... | 1 |
| Cotes-du-Nord. Asile de Lehon, | 12 | ..... | 12 |
| Cote-d'or. Asile de Dijon, | ..... | ..... | ..... |
| Eure. Asile de Navarre. | ..... | ..... | ..... |
| Eure-et-Loir. Asile de Bonneval, | 9 | 5 | 14 |
| Finestère. Asile Saint-Athanase, | ..... | ..... | 13 |
| Finestère. Quartier d'Aliénés des l'Hospice de Morlaix, | ..... | ..... | 12 |
| Garonne (Haute). Asile de Braqueville, | 2 | 1 | 3 |
| Gers. Asile d'Auch, | ..... | ..... | 6 |
| Gironde. Asile du Château-Picon, | ..... | 4 | 4 |
| Gironde. Asile de Cadillac, | ..... | ..... | 2 |
| Herbault. Quartier d'Hospice à Montpellier, | 5 | 1 | 6 |
| Ille-et-Vilaine. Asile de Saint-Méen, | 9 | 8 | 17 |
| Indre-et-Loire. Quartier de l'Hôpital Général de Tours, | ..... | ..... | 3 |
| Isère. Asile de Saint-Robert, | 2 | ..... | 2 |
| Jura. Asile Saint-Ylie, | 1 | 2 | 3 |
| Loire. Asile Privé de Montredon. | ..... | 6 | 6 |
| Loiret. Quartier d'Aliénés des Hospices d'Orléans, | ..... | 3 | 3 |
| Loir-Inférieure. Quartier d'Aliénés de l'Hospice Saint-Jacques de Nantes, | ..... | ..... | ..... |
| Loir-et-Cher. Asile de Blois, | ..... | ..... | 2 |
| Lot. Asile de Leyme, | ..... | ..... | 1 |
| Lot-et-Garonne. Quartier d'Aliénés de l'Hospice d'Agen, | 4 | 3 | 7 |
| Lozère. Asile de Saint-Alban, | 3 | 1 | 4 |
| Maine-et-Loire. Asile de Sainte-Gemmes, | 19 | 9 | 27 |
| Manche. Asile de Pont-Labbé, | 4 | ..... | 4 |
| Manche. Asile du Bon-Sauveur. | ..... | ..... | ..... |
| Marne. Asile Public d'Aliénés de Châllons-sur-Maine, | 4 | 4 | 8 |
| Marne (Haute). Asile de St. Dizier, | 3 | 11 | 14 |
| Meurthe-et-Moselle. Asile de Maréville, | 11 | 9 | 20 |
| Meuse. Asile de Fains, | 1 | 2 | 3 |
| Nièvre. Asile de la Charité, | 8 | 5 | 13 |
| Nord. Asile d'Armentières, | ... .... | ..... | 70 |
| Nord. Asile de Lommelet, | ..... | ..... | ..... |
| Oise. Asile de Clermont, | 23 | 10 | 33 |
| Orne. Asile d'Alençon, | 8 | 2 | 10 |
| Pas-de-Calais. Asile de Saint-Venant, | 6 | 4 | 10 |
| Puy-de-Dome. Asile Sainte-Marie de l'Assomption, | 3 | 3 | 6 |
| Pyrénées (Basses). Asile Public d'Aliénés de Pau, | 5 | 1 | 6 |
| Rhone. Asile de Bron, | 1 | 4 | 5 |
| Sarthe. Asile du Mons, | 4 | 3 | 7 |
| Savoie. Asile de Bassens, prés Chamberg, | 4 | 3 | 7 |
| Seine-Inférieure. Asile de Quatre-Mares et de Saint-Yon, | 45 | 39 | 84 |
| Seine-et-Oise, | 6 | 20 | 26 |
| Sèvres (Deux). Asile de la Providence à Niort, | 12 | 4 | 16 |
| Somme. Asile de Dury-les-Amiens, | 1 | 5 | 6 |
| Var. Asile de Pierrefeu, | 6 | 4 | 10 |
| Vaucluse. Asile de Mont-de-Vergues. | 3 | 4 | 7 |
| Vendée. Asile de la Roche-sur-Yon, | 15 | 12 | 27 |
| Vienne (Haute). Asile de Naugeat. | 4 | 6 | 10 |

[1] "Assistance des Enfants Idiots et Dégénérés." By Bourneville. Paris, 1895.

| PRIVATE INSTITUTIONS FOR IDIOTIC CHILDREN, EPILEPTICS AND DEGENERATES IN FRANCE. | Male. | Female. | Total. |
|---|---|---|---|
| Institut Médico-Pédagogique à Vitry (Seine), Founded 1893, | ..... | ..... | 20 |
| Institut de démutisation à Villeneuve, Founded 1878, | 10 | 6 | 16 |
| Institut des Enfants Arriérés à Eaubonne, Founded 1847. | ..... | ..... | ..... |
| Hospice de Saint-Jean-l'Aumônier à Besançon, | ..... | ..... | ..... |
| Établissement du Bon-Sauveur à Caen, | ..... | ..... | ..... |
| Asile des Infirmes à Aromas. Founded 1863, | ..... | ..... | ..... |
| Asile de Salins (Jura), | ..... | ..... | ..... |
| Asile Saint-Agnes à Saint-Martin-le-Vinoux, Founded 1868. | ..... | ..... | ..... |
| Maison du Bon-Pasteur à Vienne (Isère), | ..... | ..... | ..... |
| Asile de Tondu, prés Bordeaux (Gironde), | ..... | ..... | ..... |
| Asile de Marie-Joseph des Incurables à Rolleville, | ..... | ..... | ..... |
| Asile des Cinq-Plaies de Notre-Seigneur, | ..... | ..... | ..... |
| Asile des Jeunes Filles, Idiotes ou Infirmes de Méris, par Bailleul, | ..... | ..... | ..... |
| Asiles John Bost à La Force, | ..... | ..... | 333 |
| La Famille, | | | |
| Bethesda, | | | |
| Eben-Hazer, | | | |
| Siloé, | | | |
| Bethel, | | | |
| Le Repos, | | | |
| La Retraite, | | | |
| La Miséricorde, | | | |
| La Compassion, | | | |
| Asile des Incurables (Femmes) à Royal, | ..... | ..... | ..... |
| *Paris.* | | | |
| I. Colonie de Vaucluse (Garçons), | ..... | 141 | 141 |
| II. Section d'Enfants de l'Asile de Villejuif (Filles), | ..... | 75 | 75 |
| III. Section d'Enfants (Filles) de la Salpêtrière, | ..... | 135 | 135 |
| IV. Section des Enfants Idiots et Épileptiques de Bicêtre, | 501 | ..... | 501 |
| V. Fondation Vallée (Filles), | ..... | 130 | 130 |
| **AUSTRIA.**[1] | | | |
| Institution at Biedermansdorf, | 50 | 29 | 79 |
| Institution at Ranariedl, | 2 | 5 | 7 |
| Institution at Rainbach, | 27 | 51 | 78 |
| Institution at Graz, | 13 | ..... | 13 |
| Institution at Prague, | 40 | 15 | 55 |
| **CANADA.** | | | |
| London, Ontario, Founded 1872, | ..... | ..... | 46 |
| **AUSTRALIA.** | | | |
| Newcastle, Founded 1872, | ..... | ..... | 132 |
| **BELGIUM.**[1] | | | |
| Private Institution at Ekerbeck (Brussels), | ..... | ..... | ..... |
| Department in Hospital, Guislain, | ..... | ..... | ..... |
| **SPAIN, GREECE.**[1] | | | |
| None, | ..... | ..... | ..... |
| **HOLLAND.**[1] | | | |
| St. Heeren Loo, Ermeloo, | 36 | 36 | 72 |
| Genneskundig Gertcht, La Hague, | 6 | 5 | 11 |

[1] "Assistance."

## GERMANY.[1]

| Institution. | Founded. | No. Inmates | | | School Classes | Minimum Age of Admission. | No. Occupations Taught. | How Supported. |
|---|---|---|---|---|---|---|---|---|
| | | Male. | Female. | Total. | | | | |
| Aachen, | 1880 | 97 | 77 | 174 | 6 | .... | .... | Private. Religious Order. |
| Alsterdorfer I, | 1863 | 213 | 145 | 358 | 10 | .... | 20 | Endowment and Charity. Gifts. |
| " II, | 1882 | | | | | | | |
| Altona, | ..... | 46 | 58 | 104 | 6 | .... | .... | City. |
| Bischweiler-Oberhoffen, | 1876 | 45 | 35 | 80 | 2 | 7 | 8 | Private and Endowment. |
| | 1885 | | | | | | | |
| Braunschweig, | 1881 | 63 | 46 | 109 | 3 | 8 | 11 | City. |
| Bremen, | ..... | 31 | 27 | 58 | 3 | .... | .... | City. |
| Breslau, | ..... | 43 | 21 | 64 | 4 | .... | .... | City. |
| Chraschnitz, | 1862 | .... | .... | 265 | .... | .... | .... | Charity. |
| Chemnitz I, | ..... | 64 | .... | 64 | 3 | .... | .... | City. |
| Chemnitz II, | ..... | .... | 52 | 52 | 3 | 7 | .... | City. |
| Crefeld, | 1885 | 44 | 34 | 78 | 3 | .... | .... | City. |
| Daldorf, | 1881 | 96 | 49 | 145 | 7 | 7 | 8 | City and Endowment. |
| Darmstadt, Bessungen, | 1869 | 76 | 78 | 154 | 4 | 5 | 10 | State. |
| Dresden I, | 1873 | 30 | 20 | 50 | 6 | 6 | 6 | Private. |
| Dresden II, | 1876 | 88 | 46 | 134 | .... | .... | .... | City. |
| Dortmund— | | | | | | | | |
| *a* Evangelical, | ..... | 12 | 9 | 21 | 1 | .... | .... | City. |
| *b* Catholic, | ..... | 25 | 10 | 35 | 1 | .... | .... | City. |
| Düsseldorf, | ..... | 54 | 31 | 85 | 3 | .... | .... | City. |
| Ecksberg, | 1852 | 121 | 83 | 204 | 4 | 4 | 6 | Charity and Endowment. |
| Elberfeld, | 1879 | 55 | 49 | 104 | 4 | 8 | .... | City. |
| Erfurt, | ..... | 27 | 22 | 49 | 3 | .... | .... | City. |
| Erkerode, | 1868 | 114 | 69 | 183 | 3 | .... | 7 | Charity. |
| Essen, a. R., | 1884 | 45 | 25 | 70 | 3 | 5 | 5 | Catholic Institution. |
| Frankfurt, a. M., | ..... | 61 | 49 | 110 | 5 | .... | .... | City. |
| Germünden, a. M., | 1882 | 36 | 12 | 48 | 3 | 5 | 8 | Private. |
| Gera, | 1874 | 8 | 20 | 28 | 2 | 8 | .... | City. |
| Gladbach, | 1859 | 124 | 50 | 174 | 8 | 5 | .... | Charity and Endowment. |
| Glött, | 1869 | .... | 97 | 97 | 4 | 5 | 4 | Private. |
| Görlitz, | ..... | 12 | 9 | 21 | 1 | .... | .... | City. |
| Gotha, | ..... | 14 | 15 | 29 | 2 | .... | .... | City. |
| Hannover, | ..... | 81 | 48 | 129 | 6 | ... | .... | City. |
| Halberstadt, | 1883 | 9 | 14 | 23 | 1 | 9 | .... | City. |
| Halle, a. d. S., | ..... | 9 | 8 | 17 | 1 | .... | .... | City. |
| Hamburg, | ..... | .... | 20 | 20 | 1 | 6 | .... | City. |
| Hasserode, a. H., | 1861 | .... | 28 | 28 | 2 | .... | .... | Charity and State Aid. |
| Herthen, | 1879 | 110 | 98 | 218 | ... | 2 | .... | Private. |
| Hubertusburg, | 1846 | 58 | 44 | 102 | 11 | 5 | 5 | State. |
| Karlsruhe, | ..... | 10 | 14 | 24 | 2 | .... | .... | City. |
| Kiel, | 1862 | 30 | 25 | 55 | .... | 3 | 10 | Private. |
| Köln, | 1886 | 131 | 123 | 254 | 10 | 8 | .... | City. |
| Kuchenmühle, | 1863 | 117 | 100 | 217 | 5 | 5 | .... | Charity and Endowment. |
| Langenhagen, | 1862 | 213 | 156 | 369 | 11 | 5 | 19 | Province. |
| Leipzig, | 1881 | 103 | 66 | 169 | 11 | 8 | 6 | |
| Leschnitz, | 1871 | 18 | 12 | 30 | 2 | .... | .... | Charity. |
| Liegnitz, | 1881 | 17 | 13 | 40 | .... | 8 | .... | Private. |
| Lübeck, | ..... | 39 | 33 | 72 | 4 | .... | .... | City. |
| Magdeburg, | ..... | 56 | 47 | 103 | 5 | .... | .. | City. |
| Mainz, | ..... | 26 | 14 | 40 | 2 | .... | .... | Private. |
| Mariaberg, | ..... | 71 | 44 | 115 | 4 | 5 | 8 | Private. |
| Marsberg, | 1881 | 69 | 36 | 105 | 4 | 5 | 9 | Province. |
| Möckern, | 1847 | 34 | 9 | 43 | 4 | .... | 4 | Private. |
| Mosbach, | 1880 | 32 | 25 | 57 | 4 | 5 | 8 | Charity and Endowment. |
| Neinstedter Anstalten I, | 1861 | 150 | .... | 150 | 3 | 10 | 2 | Charity. |
| " " II, | 1864 | 6 | 70 | 76 | 2 | 6 | 2 | Charity. |
| " " III, | 1876 | 25 | 140 | 165 | 3 | 6 | 3 | Charity. |
| " " IV, | 1884 | 80 | .... | 80 | 2 | 10 | 2 | Charity. |
| Neuendettelsau, | 1854 | .... | 150 | 150 | 4 | 6 | 3 | Private. |
| Nordhausen, | ..... | 15 | 4 | 19 | 1 | .... | .... | City. |
| Polsingen, | 1862 | 102 | .... | 102 | 4 | 6 | 5 | Private. |
| Potsdam, | 1865 | 81 | 40 | 121 | 5 | 5 | 5 | Charity. |
| Rastenburg, | 1864 | 52 | 18 | 70 | 3 | 6 | 3 | Private. |
| Sayn, | 1870 | 6 | 6 | 12 | .... | 6 | .... | Private. |
| Scheuern, | 1870 | 110 | 76 | 186 | 4 | 6 | 11 | Private. |

[1]Sengelman, Das Blinden-Idioten-und Taubstummen Bildungswesen, Norden, 1887. Also, Allgemeine Deutsche Lehrerzeitung, 7 April, 1895.

## GERMANY.

| Institution. | Founded. | No. Inmates | | | School Classes | Minimum Age of Admission. | No. Occupations Taught. | How Supported. |
|---|---|---|---|---|---|---|---|---|
| | | Male. | Female. | Total. | | | | |
| Schleswig, | 1852 | 55 | 22 | 77 | 3 | 5 | 12 | Private, |
| Schreiberhau, | 1845 | 14 | 9 | 23 | .... | 6 | 4 | Private. |
| Schwerin, | 1867 | 27 | 24 | 51 | 5 | 5 | 8 | State. |
| Stettin, | 1849 | 174 | 121 | 295 | 7 | 6 | 11 | Charity. |
| Stettin, | ..... | 5 | 4 | 9 | 1 | .... | .... | City. |
| Weimar, | ..... | 14 | 11 | 25 | 1 | .... | .... | City. |
| German Institution in Russia. Sassenhof bei Riga, | 1854 | 21 | 15 | 37 | 4 | 3 | .... | Private. |
| **SWITZERLAND.** | | | | | | | | |
| Berne, | ..... | .... | 36 | 36 | 2 | .... | .... | |
| Basel, | 1857 | 14 | 6 | 20 | .... | .... | .... | |
| Horn, | 1880 | 9 | 18 | 27 | .... | 866 | 5 | Private. |
| Schloss Regensberg, | 1883 | 40 | ... | 40 | 6 | 6 | .... | Corporation, Endowment. |
| St. Gallen, | ..... | 14 | 12 | 26 | 2 | .... | .... | |
| Winterthur, | ..... | 8 | 8 | 16 | 1 | .... | .... | |
| Zürich, | 1850 | 35 | 36 | 71 | 3 | 8 | .... | Private. |
| Schoffhausen. Asile de l'Espérance bei Alleman, | ..... | .... | .... | 32 | .... | .... | .... | Private. |

### ITALY.[1]

"Villa Tomassini," 25
Pœdagogium Italianum (Private),
Instituto Italiano dei Frenasteni, Vercurago (Private),

### DENMARK.[1]

John Keller Institutions, Copenhagen, Eight Divisions,
Gamle Bakkehus Institutions, Three Divisions,
Ebberodgaard, 64

### NORWAY.

Lindern, Christiania, 130
Thornsang, Christiania, 175
Söerthe, Bergen, 130

### SWEDEN.

Stockholm, 40
Mariestad, 40
Strengnas, 20
Gefle, 40
Soderkoping, 24
Lund, 50
Eksjo, 40
Orebro, 20
Carlsro vid Upsala, 28
Hammarby, 30
Carlshamn, 20
Hessleholm, 36
Karlstad, 15
Falun, 10
Sodertelje, 7
Bankeryd, 12
Upsala, 16
Upsala, laus arbetshim for man vid Carlro, 10
Gefle, Gefleborgs lans arbetshim for man vid Carlsberg, 10
Gefle, Samna forunngs arbetshim for grinnor, 18
Norrtwltsga, 8
Johannesberg I, 22
Johannesberg II, 6
Strimsholm, 22
Lcfesbergs soken Nariestad, 11
Jonkoping I, 8
Jonkoping II, 30
Sundyberg, 13
Mariestad, Asylet Hogalid, 8
Asylet vid Ahns, 8

### RUSSIA.

Riga, 28
St. Petersburg,
I, 40 males, 35 females, 75
II, "Emmanual Stift," 20 males, 20 females, 40
III, 52
IV, Private,
Moscow,
Voronege,

### FINLAND.

Berttula, 19 males, 15 females, 34

### POLAND.

None,

### SOUTH AMERICA.

Chili. Idiots are received in some of the hospitals.
Argentine Republic. Department in the Hospital of Los Mercedes, 28
In the Hospital for Demented Women, 30
Bolivia and Columbia, none.

[1]Assistance.

## Bibliography.

Very much literature has been published upon this subject, not only in book form, but also in newspapers, reports and magazines. The following is a list of representative books, articles, and periodicals relating to feeble-mindedness, together with a few others on the psychology of childhood.

Association of Medical Officers of American Institutions for Idiotic and Feeble-Minded Persons. Proceedings, 1876-95.

Bourneville. Assistance Traitement et Éducation des Enfants, Idiots, et Dégénérés. Publications du Progrès Médical. Paris, 1895.

Bucknill, J. C., and Tuke, D. H. A Manual of Psychological Medicine, 4th Ed. London, 1879.

Clouston, T. S. The Neuroses of Development. London, 1891.

Davis, C. H. S. Classification, Training and Education of the Feeble-Minded, Imbecile and Idiotic. New York, 1883.

Down, J. Langdon. On the Education and Training of the Feeble in Mind. London, 1876.

Down, J. Langdon. On Some of the Mental Affections of Childhood and Youth. London, 1887.

Duncan, P. M., and Millard W. Manual for the Classification, Training and Education of the Feeble-Minded, Imbecile and Idiotic. London, 1886.

Ellis, Havelock. The Criminal. London, 1890.

Emminghaus, H. Die Psychischen Störungen im Kindes-Alter. Gerhardt's Handbuch der Kinderkrankheiten. Nachtrag II. Tübingen, 1887.

Feeble-minded Child and Adult, The. A Report on an Investigation of the Physical and Mental Condition of 50,000 School Children, with Suggestions for the Better Education and Care of the Feeble-Minded Children and Adults. London, 1893.

Feeble-Minded, Epileptic, etc. (Interim Report). Charity Organization Series. London, 1891.

Fernald, W. E. The History of the Treatment of the Feeble-Minded. Boston, 1893.

Henderson, Charles Richmond. Dependent, Defective and Delinquent Classes. Boston, 1893.

Howe, S. G. Idiots. Report. [House Doc. 152.] Boston, 1847.

Howe, S. G. Report on Idiocy. [Senate, No. 58.] Boston, 1850.

Howe, S. G. On the Causes of Idiocy. Edinburgh, 1858.

Institution Bulletin, The. Quarterly Announcement of the California Home for the Care and Training of Feeble-Minded Children. Vols. I-VI.

Ireland, W. W. On Idiocy and Imbecility. London, 1877.

Kellers, Johann. Abnormanstalter, 1885. Kjobenhavn, 1886.

Kerlin, Isaac N. The Mind Unveiled. Philadelphia, 1858.

Kielhorn. Geistesschwache Kinder und deren Erziehung. Pädagog. Blätter von Kehr, 1884.

Kielhorn. Über Schulen für Schwachbefähigte Kinder. Pädagogium Jahrg., 1886.

Merle, H., Sengelmann, H., Söder. Das Blinden-Idioten-und Taubstummen Bildungswesen. Norden, 1887.

MILLER, S. MILLINGTON. Mind Building for Idiots. *The Outlook*, Jan. 12, 1895.

PEREZ, BERNARD. The First Three Years of Childhood. Translated by Alice M. Christie. Syracuse, 1889.

PALMER, K. Bilder aus Neu-Erkerode.

PIPER, H. Zur Ætiologie der Idiotie. Berlin, 1893.

PLATZ, THERESE. Fortsetzung der Mitteilungen aus den Jahren 1876, 1879, 1882, über die heilpädagogische Austalt für Krampfleidende, Geistigzurükgebliebene, Schwachsinnige und Idioten. Riga, 1886.

PREYER, W. Infant Mind. International Education Series. New York, 1893.

Proceedings of the National Conference of Charities and Correction. 1884, 1888, et. al.

Report of a Special Committee of the Charity Organization Society on the Education and Care of Idiots, Imbeciles and Harmless Lunatics. London, 1877.

Recherches Cliniques et Therapeutiques sur l'Epilepsie, l'Hystérie, et l'Idiotie. Paris, aux Bureaux du Progrès Médical.

SEGUIN, E. Idiocy and Its Treatment by the Physiological Method. New York, 1870.

SEGUIN, E. Traitement Moral, Hygiène, et Éducation des Idiots et autres Enfants ariérés. Paris, 1846.

SEGUIN, E. New Facts and Remarks Concerning Idiocy. A Lecture. New York, 1870.

SEGUIN, E. Psycho-Physiological Training of an Idiotic Hand. Archives of Medicine, Vol. II.

SEGUIN, E. Psycho-Physiological Training of an Idiotic Eye. Archives of Medicine, Vol. IV.

SENGELMANN, H. Idiotophilus. Norden, 1885.

SHUTTLEWORTH, G. E. The Health and Physical Development of Idiots. Health Exh. Lit., Vol. XII.

SHUTTLEWORTH, G. E. The Care of the Mentally Feeble Child. London, 1892.

SHUTTLEWORTH, G. E. Mentally Deficient Children. London, 1895.

SOLLIER, PAUL. L'Idiotie et l'Imbécilité au Point de Vere Monographie. Archive de Neurologie, Jan., 1894.

SOLLIER, PAUL. Psychologie de l'Idiot et de l'Imbécile. Paris, 1891.

TRACY, FREDERICK. The Psychology of Childhood. 2nd Ed. Boston, 1894.

TRÜPPER, J. Psychopatische Minderwertigkeiten im Kindesalter. Gütersloh, 1893.

TUKE, D. HACK. Modes of Providing for the Insane and Idiots in the U. S. and Great Britain. Med. Rec., 1887.

VOISIN, JULES. L'Idiotie. Paris, 1893.

WALKER, ELIZA A. Dull Children, and How to Deal With Them. A paper read at the Liverpool Ladies' Conference. Liverpool, 1892.

WARNER, FRANCIS. Mental Faculty. London, 1890.

WARNER, FRANCIS. Milroy Lectures on an Inquiry as to the Physical and Mental Condition of School Children. British Medical Association, 1892.

WILBUR, W. B. Suggestions on Principles and Methods of Elementary Instruction. Albany, 1862.

WILMARTH, A. W. A Report on the Examination of 100 Brains of Feeble-Minded Children. Alienist and Neurologist, Oct., 1890.

Zeitschrift für die Behandlung Schwachsinniger und Epileptischer. Organ der Conferenz für Idioten-Heil-Pflege. Dresden, 1882-94.

FOR OTHER BIBLIOGRAPHIES, SEE

Abnormal Man, by Arthur Macdonald. Bureau of Education, Circular of Information, No. 4, 1893.

The Feeble-Minded Child and Adult. London, 1893.

On Idiocy, by Edward Seguin, New York, 1870.

Index Catalogue of the Library of the Surgeon-General's Office, U. S. Army, Vol. VI, under *Idiots*.

Gerhardt's Handbuch der Kinderkrankheiten. Nachtrag II.

Mentally Deficient Children, by G. E. Shuttleworth. London, 1895.

# THE ART OF LITTLE CHILDREN.

During the years 1892 and 1893 I worked over some thousands of children's drawings with a view to finding what we could learn of their modes of thinking and feeling through that form of expression. The results were embodied in a paper read before the Educational Congress in Chicago, and afterwards published in this journal[1]. A year later my attention was called to a similar study made by Mr. Corrado Ricci in 1887[2]. Mr. Ricci's study was confined to 1,250 papers; it covers both pictorial and plastic art, and it gives no quantitative results. He has also several wide digressions on color and on the historical bearings of his study. The part dealing with children's drawings, however, reaches conclusions so like my own that I feel greatly encouraged concerning the possibility of reaching some sound results by this method of study. At the same time, his study, made some five years before my own, lays me open to the charge of gross plagiarism.

Mrs. Louise Maitland has made the following slightly condensed translation of that part of Mr. Ricci's work dealing with drawings, and I am sure it will prove of interest to the readers of the PEDAGOGICAL SEMINARY.

EARL BARNES.

## I.

One winter's day of the year 1882-83, returning from the Carthusian monastery at Bologna, I was driven by a downpour of rain to take refuge under the portico leading to Meloncello.

I had not known that under this arch was to be found a permanent exhibition, both literary and artistic, possessing little æsthetic merit perhaps, and hardly what could be considered chaste. The verses and drawings were all inspired by an extremely crude realism, compared with which certain sonnets of Marino and novels of Casti would figure as moral treatises. The works of the youngest artists, those occurring, naturally, lowest down on the wall, showed themselves least technical and logical; they were, nevertheless, characterized by greater decency, and the poetical effusions were notably diminished.

The sadness of the day, of the place, of my mind, quite out of unison with the brutal and obscene epigrams which abounded higher up on the wall, reconciled me to the art of the little ones and suggested to me the present study.

## II.

I began by setting to work the little daughter of one of my friends, but soon found that in this manner the matter would pro-

[1] See PEDAGOGICAL SEMINARY, Vol. II, p. 455.
[2] L'Arte dei Bambini. By Corrado Ricci, Bologna, 1887.

gress too slowly, for after five months' work, I had hardly secured over a hundred of these artistic documents. I therefore changed my tactics and had recourse to the elementary schools, thronged by all classes of children. The idea proved excellent. In less than a month, thanks to the aid of my friend Rafael Belluzzi and of the teachers, I was in a condition to bring my consideration to bear upon about a thousand drawings, male and female; nor did the collection stop at this point, for I received, thanks to Dr. Adolpho Venturi, a noted art critic, and inspector of the Estense Gallery, who obtained them from the schools of Modena and was kind enough to give them to me, another two hundred and fifty drawings. . . .

With this amount of material, of whose authenticity I could have no doubt, I took heart of grace and set to work.

## III.

The sacred Scriptures tell us that the eternal Father finished His work by the creation of man. With the creation of man, on the contrary, the children begin theirs. Generally up to the age of three years it seems that children do not know that black lead leaves traces on white paper, and it is the practice of the greater number who take a fancy to draw, to interlace on the paper a network of lines running in all directions, without displaying the least intention of representing anything. When first, therefore, such an intention shows itself, ninety-nine times out of a hundred they try to give expression to a man by means of a square or badly drawn circle and two vertical lines, standing for the head and the legs. This excessive reduction of a man is not confined solely to the youngest children, but is found frequently to be the case with those of six to eight years of age, among children giving no signs of lack of intelligence. It will become apparent from what follows that it is not difficult to understand why the little artists content themselves with such imperfect creations. This reason, if in its nature not deep, we shall still see presents a perfectly practical side.

The head and the legs only? What more is wanted for seeing, eating and walking? And if the arms and the torso are lacking, so much the better, they will not have to work so much; this will not be unpleasant to the heart, and really the stomach does not matter. Children, however, are hardly actuated by the philosophy that would lead them to suppress the head in order to study less. Before a man becomes entire he must pass through many stages, and they are not prompted to jump at once from this primitive form to complete physical integrity. It is necessary to have patience and to make gradual concessions, for children progress little by little, from the head and the legs to an arm or a bust, but never, or only in the very rarest cases, to both at once. Only later are they driven to this deference to the demands that will suffice for the exigencies of the most modest inventory, and then they attach the arms indifferently to the head, the neck or the waist. The position is to them an entirely secondary affair; the important thing is that finally the man shall possess arms. But we must not imagine from this that they are at once in a condition to make the limbs obey the frequent and instinctive actions that are called for by the common needs of life. They cannot, for instance, ever carry the hand to the mouth, the nose, or any part of the head, nor can they touch the chest. This is accounted for by the absence of knees in the

legs, or elbows in the arms. But human activity very quickly demands the articulation of the legs and arms, and recognizing the urgent necessity, the little artists make plentiful concessions, sometimes too extravagantly, since they dispense with angles altogether, and conduct the hands and feet in the desired directions by means of generous curves. Through many devious paths, then, man passes in children's art before he can assume a legitimate form.

## IV.

Once intact, however, this man no longer submits to the suppression of any part of himself, at least in the eyes of the young observer, and there arise very grave objections to any such course. If the man is shown on horseback, both his legs are visible; if in a boat, the whole of his body, as if seen through the transparent side of the boat, or as if, at any rate, they were seen both at the same time.

What, then, is the rule that guides the children in their art? On what do almost all their errors (not technical, of course, but logical) depend? Simply upon this: the child describes the man and things instead of rendering them artistically. They try to reproduce him in his literal completeness, and not according to the visual impression. They make, in short, just such a description in drawing as they would make in words.

They know that a man has two legs, and they draw him with both, even when they must reproduce the man in such a position as would conduce rightly to showing only one, or even none at all. There are a number of proofs to be found of this in the collection of drawings. With very few exceptions, all those who have made two or more men in a boat, have made them entire from head to foot, without remembering that the side of the boat hides a great part of the body. They reason, or perhaps they fail to reason, and say, "The man in the boat is there altogether, and if he is all there, why should we draw only half of him?"

And to what means do they have recourse to draw everything thus completely? Either they make the boat consist of a single curved line, leaving in this way the figures wholly discovered, or they draw the side of the boat transparent, as if it were of pure crystal, or, finally, they put the figure full length outside the boat, as if he had jumped out in order to be perceived by the artist.

In support of the laws thus established there are other proofs. An adult, even the least intelligent, looking at a man's profile, understands that a good third of the body remains hidden from view, and artistically he will suppress it. On this account, speaking in generalities, a large part of the arm, sometimes even all, and half of the face, or nearly, are not seen, and he will not express it. But the little ones generally follow their own law and say, "A man should stand as it pleases him, in profile or full face, and there is no reason for curtailing him; seen from just one side or the other, he will always be a man with two arms and two eyes."

In all the drawings I have collected, on looking at the profiles, I found, first, that they show almost always the two arms, attached at different heights to the middle of the breast, or hanging from the neck like the two ends of a scarf, or more frequently still, both drawn on the same side, one near the shoulder, the other at the waist. Secondly, that in drawing the profile, seventy times out of a hundred, they still keep the two eyes of the full face.

## VI.

A man fortunately has only one nose and one mouth that can by any possibility be reasonably drawn in a simple profile, but the eyes cannot be shown unless one of them is put in the wrong place. We see here how strong are the laws already indicated. . . . Some of the children know very well that a man has two eyes, and, therefore, they ought to draw both; but they also remember that between the two eyes hangs only one nose, so what are they to do? Draw the face with its nose in profile, and put the two eyes full face. This occasions a moment of doubt, and they resolve out of it a second nose, that may be called the supernumerary nose of primitive logic, because it is entirely the most original product of the laws of integrity that dominate all infantile art.

Landscape comes also under the prescribed laws. The children draw the three sides of a house; they make it and its two flanks. And why draw three? Because they have not yet found the way, the cipher, rather, by which they can draw all four. "Thanks to heaven," say the children, "the house has four sides, and so all ought to be drawn." But we need not exaggerate their critical sense, and if their perspective is not yet quite perfect, they have to content themselves with showing only three.

On examining the landscape one very often sees through the walls the men ascending the stairs, or the sexton who rings the bell can be seen through the walls of the bell tower. This is also the case with the people who fill the cars. All, in short, that the children know, or, to put it better, think they know, is there, must be seen, notwithstanding any obstacles, natural or artificial. Does any one object that often they simply draw a house, a tower, or a church, without figures? True, but in such a case they have no intention of drawing anything but a house, a tower or a church. If to one of them it occurs to suggest the use of either of those buildings, this is done by the addition of a man who passes through a room, of a cook who prepares dinner, and these they designate by symbols, as I have myself found at least a hundred times. That no child from among so many will make the objection (which all adults would make) that this man and this cook who are in the house, could not possibly be seen from the outside, is just because, given that this man and this cook are or should be in the house, according to the logic of the children, they should also be visible. . . .

## XI.

The children's art presents another characteristic side, and upon this alone I could write a volume, which would be neither useless nor uninteresting, but in connection with the present work it needs only a brief mention. I speak of the details which in all their minuteness impress the infant mind more than the sublime. No one can have observed oftener than I, in San Petronio of Bologna, that never a child entering the church raises his head impressed by the grandeur of the arches and the vaulting, which are capable even of compelling the admiration of the conscripts and the peasantry.

That which interests the children is the minute, the particular, is, for example, a shepherd with a basket of eggs, a priest who passes with an extinguisher, an old woman with a brazier, or a beggar in a scarlet cloak. And though they make so much of these little things "that the foot goes slowly and the eye wanders," the

church in its majesty neither repels nor attracts them. In the houses they will oftener forget to put the windows than the chimneys, these latter always in great numbers, and smoking abundantly. That vivid and fantastic pennant of smoke ascending from the roofs, what a great impression it has made on the little artists, if they cannot keep themselves from putting it even on the churches and the bell towers.

And what shall I say of the pipe and the stove-pipe hat?

The pipe is the supreme ideal of a child, the glowing emblem of the final conquest. Later on, the boy will consider that to appear as a man, fine clothes and the love of a woman are essential, but at first the idea of a man lies for him in the pipe, and if he has secretly obtained one, even if he does not actually bring the contraband article in immediate contact with his lips, he blows at the smoke from the outside with an air of ineffable superiority and disdain. The pipe puts in an appearance in almost all his drawings, even the most primitive. You look at a man made only of a head and legs, his arms and his body are wanting, but what does it matter if he is fortunate enough to possess a pipe?—and these cavaliers in the saddle, these gentlemen who enjoy the sea breezes in a boat, each has his own pipe.

The top-hat is not less fortunate, and it also glorifies the head of the primitive man.

I do not speak of the other details, such as the hundreds of flags that fly from the ships, the steamers puffing in the race, the trees, the houses, the campaniles of the cavaliers or pedestrians; nor will I speak of the musket or the sword put at the side of some man, and mitigating to some extent the grandeur of the stove-pipe hat or the colossal dimensions of the pipe. From all of this we comprehend that every child draws that which most interests him, or that for which he most wishes. A child will put in vases and bunches of flowers, as well as muffs, fans and umbrellas, all the elegant paraphernalia, in fact, of a woman's attire. The ladies whom they draw always answer to the requirements of fashion. They answer less well to even the most modest inventory of human proportions. A child will draw the two arms on the same side of the body, but he will not omit anything pertaining to the most perfect dandyism.

## XII.

Besides these peculiarities prompted by facts or by the constant and predominating desire felt by the child, are to be noticed sometimes, also, the peculiarities suggested by some special fact or instantaneous impression. Some children see a horse fall in the street; if they are made to draw on the same day, eighty times out of a hundred they will draw a falling horse. Among the sketches I possess, some are to be found all dotted over with marks; they were made on a snowy day. . . .

## XX.

For those who are interested in my study, I must make one final observation. The examples have proved that children at first do not artistically represent an object, but describe it according as the memory of it is more or less complete, and suggests to them while drawing the different parts of the object. Art, as art, is to them unknown. Those draw least badly and learn quickest the true

integrity of things who have the best memories, but when representation is np longer solely a product of memory alone, as with children, but the result of independent forces, such as the æsthetic sense, good taste, the perfection and delicacy of the sense of sight, the lightness of the hand, and in general the technical practice, the best artists do not always prove to be those who have the best memories. I have, in fact, proved from observation of children of most schools, that those who have made the best drawings, save with one or two exceptions, are the best among the scholars, and are those who most satisfactorily think and record, and are in a condition to produce a fuller inventory of the things learned by them, as they have learned their lesson. Later on, however, those whc will reveal themselves to be strong and original artists may very well be those who in school cut the poorest figure.

## THE RELATION OF STRENGTH TO FLEXIBILITY IN THE HANDS OF MEN AND CHILDREN.

It is commonly supposed that this relation is an inverse one. For the purpose of determining it as well as studying the strength and flexibility of the hands of children of different ages, the writer took up the problem near the close of the year's work at Clark University. Results thus far obtained can have a general value only, but for the purpose of gathering criticisms and suggestions for a more elaborate study, they are reported now.

It is thought that not only this relation, but that a definite knowledge of the strength flexibility and voluntary control of the hand have bearings on physical and manual training, writing and drawing.

Twenty men, twenty-two boys, and eleven girls have served as subjects. Fourteen of the men are university students; two, members of the faculty; one, the clerk of the university; and three, workmen at the university, men past middle life.

The children were pupils in one of the Worcester first primary schools. Their ages range from 6 years to 7½ years. They were all acquainted with the writer, having served him as subjects in a previous study. The strength of the hand was tested by gripping a "Salter" dynamometer; the degree to which voluntary movement of the joints could be made was measured by protractors modified for the purpose. In getting the grip of the hand several trials, alternating the hands, were permitted. The best results are taken. With at least 50 per cent. of the subjects the second efforts showed a loss with one hand and a gain with the other. Third trials rarely gave any gain.

Tables showing grip of hands in nearest five pounds:

| | | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 | 120 | 125 | 130 | 135 | 140 | 145 | 150 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 men. | R't | 1 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 2 | 2 | 2 | 1 | 2 | 0 | 0 | 0 | 1 |
| | L't | 0 | 0 | 3 | 1 | 5 | 3 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |

| | | 5 | 10 | 15 | 20 | 25 | 30 |
|---|---|---|---|---|---|---|---|
| 22 boys. | R't | 0 | 2 | 10 | 8 | 1 | 1 |
| | L't | 1 | 5 | 8 | 7 | 1 | 0 |
| 11 girls. | R't | 0 | 1 | 4 | 6 | 0 | 0 |
| | L't | 1 | 5 | 3 | 2 | 0 | 0 |

No one showed exactly equal strength of hands. Generally the right hand is the stronger.

Differences between the strength of the hands range from three to twenty-one pounds.

The weakest right-hand grip was by the oldest man; with his left hand he gripped ninety-five. He is not left-handed.

The best right and left-hand grips were made by students.

Comparing the right and left hands of each man, there is greater

flexibility of the weaker hand in thirteen instances. This is true of fourteen of the boys and seven of the girls.

Comparing stronger with weaker individuals, the weaker ones have more flexible hands in a few cases only.

The width of the hands was taken at the metacarpophalangeal joints, with these results:

| | Cm's. | 7.8 | 7.9 | 8.0 | 8.1 | 8.2 | 8.3 | 8.4 | 8.5 | 8.6 | 8.7 | 8.8 | 8.9 | 9.0 | 9.1 | 9.2 | 9.3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Men. | Right | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 5 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Left | 1 | 0 | 1 | 3 | 4 | 0 | 0 | 4 | 0 | 2 | 0 | 1 | 2 | 2 | 0 | 0 |

| | Cm's. | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boys. | Right | 0 | 0 | 1 | 1 | 0 | 3 | 3 | 3 | 2 | 1 | 3 | 3 | 3 | 1 | 1 |
| | Left | 2 | 0 | 1 | 0 | 0 | 2 | 2 | 4 | 3 | 1 | 1 | 2 | 2 | 0 | 2 |
| Girls. | Right | 0 | 0 | 1 | 0 | 1 | 2 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| | Left | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

Nine of the men, fourteen of the boys and five of the girls showed greater strength in the wider hand.

The right hand was as wide as the left in four cases among the men, six of the boys, and four of the girls.

The greatest difference between the right and left hand in the same individual was for the men 7 mm., for the children 5. Listing the widths in order of the strength of each of the hands, the total of the widths of the stronger ten of the men slightly exceeds that of the weaker. The total of the widths of the right hands slightly exceeds that of the left.

A similar arrangement for the boys gives the same results.

The length of the large finger was taken on each hand. In a number of cases with both men and children, it was difficult to get the measurement quite satisfactorily. Hence I give them as grouped in the nearest half cm.

| | | 8.0 | 8.5 | 9.0 | 9.5 | 10.0 | 10.5 | 11.0 | 11.5 | 12.0 | 12.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 men. | Right | 1 | 0 | 0 | 0 | 0 | 3 | 4 | 3 | 7 | 2 |
| | Left | 1 | 0 | 0 | 0 | 0 | 6 | 3 | 5 | 5 | 0 |

| | | 6.5 | 7.0 | 7.5 | 8.0 | 8.5 |
|---|---|---|---|---|---|---|
| 22 boys. | Right | 0 | 7 | 10 | 4 | 1 |
| | Left | 2 | 7 | 7 | 6 | 0 |

| | | 6.5 | 7.0 | 7.5 | 8.0 |
|---|---|---|---|---|---|
| 11 girls. | Right | 1 | 1 | 7 | 2 |
| | Left | 1 | 2 | 6 | 2 |

In the remaining tables results for the boys and girls are given together, since there do not appear, from the limited data, material differences between them.

The flexibility of the wrist in degrees for the men is as follows:

MEN.

| | Degrees | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right wrist | Forward | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 2 | 3 | 2 | 4 | 3 | 1 | 0 | 1 |
| | Backward | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 4 | 1 | 2 | 2 | 1 | 2 | 0 | 0 |
| Left wrist | Forward | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 3 | 4 | 1 | 3 | 5 | 0 | 0 |
| | Backward | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 6 | 4 | 3 | 2 | 0 | 0 | 0 |

CHILDREN.

| | Degrees | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right wrist | Forward | 1 | 0 | 0 | 0 | 2 | 0 | 6 | 3 | 4 | 7 | 7 | 2 | 1 | 0 |
| | Backward | 1 | 0 | 0 | 0 | 1 | 1 | 4 | 2 | 5 | 10 | 4 | 5 | 1 | 0 |
| Left wrist | Forward | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 2 | 4 | 9 | 5 | 6 | 1 | 1 |
| | Backward | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 4 | 13 | 8 | 2 | 1 | 0 |

The flexibility of the metacarpophalangeal knuckles of the men is shown in the following table :

| | Degrees | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right | Index | 1 | 0 | 4 | 3 | 2 | 3 | 6 | 0 | 1 | 0 | 0 |
| | Middle | 0 | 1 | 0 | 2 | 3 | 4 | 7 | 1 | 1 | 1 | 0 |
| | Ring | 0 | 0 | 0 | 1 | 3 | 6 | 5 | 1 | 3 | 1 | 0 |
| | Little | 0 | 1 | 1 | 0 | 0 | 3 | 7 | 4 | 2 | 0 | 2 |
| Left | Index | 0 | 1 | 4 | 5 | 0 | 5 | 2 | 3 | 0 | 0 | 0 |
| | Middle | 0 | 1 | 2 | 1 | 2 | 6 | 4 | 2 | 2 | 0 | 0 |
| | Ring | 0 | 1 | 1 | 1 | 2 | 7 | 4 | 3 | 1 | 0 | 0 |
| | Little | 0 | 1 | 1 | 2 | 0 | 8 | 1 | 4 | 2 | 1 | 0 |

Table showing same for the children :

| | Degrees | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right | Index | 1 | 0 | 2 | 5 | 6 | 10 | 2 | 5 | 0 | 2 | 0 | 0 |
| | Middle | 0 | 0 | 2 | 2 | 2 | 8 | 8 | 9 | 0 | 1 | 0 | 1 |
| | Ring | 0 | 0 | 1 | 1 | 5 | 11 | 8 | 7 | 0 | 0 | 0 | 1 |
| | Little | 0 | 0 | 2 | 3 | 4 | 8 | 7 | 9 | 0 | 0 | 0 | 1 |
| Left | Index | 0 | 0 | 3 | 2 | 10 | 5 | 9 | 3 | 1 | 1 | 0 | 0 |
| | Middle | 0 | 0 | 2 | 1 | 6 | 7 | 10 | 5 | 1 | 1 | 0 | 0 |
| | Ring | 0 | 0 | 2 | 2 | 7 | 11 | 6 | 3 | 1 | 0 | 0 | 0 |
| | Little | 1 | 0 | 2 | 2 | 5 | 11 | 4 | 6 | 2 | 0 | 0 | 0 |

The table for the men shows less flexibility of the index finger than of the others. The larger numbers for the left hand are, excepting the index knuckle, grouped from 85° to 95°. In the right hand it is from 70° to 90°, excepting the little finger.

The results are somewhat similar for the children, few going over 85°, and the large numbers being divided between 70, 75, 80 and 85 degrees.

Tables for flexibility of first interphalangeal joints :

MEN.

| | Degrees | 85 | 90 | 95 | 100 | 105 | 110 | 115 | 120 | 125 |
|---|---|---|---|---|---|---|---|---|---|---|
| Right | Index | 1 | 1 | 3 | 3 | 8 | 0 | 3 | 0 | 1 |
| | Middle | 0 | 2 | 2 | 3 | 6 | 3 | 3 | 1 | 0 |
| | Ring | 0 | 0 | 2 | 2 | 3 | 6 | 6 | 1 | 0 |
| | Little | 0 | 2 | 2 | 5 | 6 | 2 | 3 | 0 | 0 |
| Left | Index | 0 | 5 | 1 | 4 | 4 | 2 | 3 | 0 | 1 |
| | Middle | 0 | 2 | 1 | 4 | 7 | 3 | 2 | 0 | 1 |
| | Ring | 0 | 0 | 3 | 0 | 6 | 3 | 7 | 0 | 1 |
| | Little | 0 | 3 | 1 | 4 | 7 | 3 | 1 | 0 | 1 |

CHILDREN.

| | Degrees | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 | 120 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Right | Index | 1 | 0 | 2 | 1 | 13 | 5 | 8 | 3 | 0 | 0 |
| | Middle | 0 | 0 | 0 | 2 | 13 | 5 | 10 | 3 | 0 | 0 |
| | Ring | 1 | 0 | 0 | 1 | 11 | 4 | 12 | 4 | 0 | 0 |
| | Little | 0 | 2 | 1 | 7 | 11 | 2 | 6 | 4 | 0 | 0 |
| Left | Index | 1 | 0 | 0 | 1 | 7 | 8 | 11 | 4 | 1 | 0 |
| | Middle | 0 | 0 | 0 | 0 | 9 | 7 | 10 | 6 | 0 | 1 |
| | Ring | 0 | 1 | 0 | 1 | 7 | 8 | 10 | 5 | 0 | 1 |
| | Little | 2 | 0 | 3 | 5 | 10 | 5 | 4 | 4 | 0 | 0 |

For the men 105° is the highest point, excepting the ring finger, where there are six each who reach 110° and 115°. Ten degrees less will in each case serve to indicate the "high water mark" for the children. The general flexibility of these joints is greater than any of the others.

Table showing flexibility of the second interphalangeal joints:

MEN.

| | Degrees | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right | Index | 1 | 0 | 0 | 0 | 2 | 7 | 3 | 2 | 3 | 1 | 0 | 1 | 0 | 0 |
| | Middle | 0 | 0 | 1 | 1 | 2 | 5 | 3 | 3 | 0 | 3 | 0 | 0 | 1 | 1 |
| | Ring | 0 | 0 | 0 | 2 | 4 | 4 | 5 | 2 | 2 | 0 | 0 | 0 | 1 | 0 |
| | Little | 0 | 2 | 0 | 0 | 2 | 4 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 0 |
| Left | Index | 1 | 0 | 0 | 0 | 1 | 5 | 4 | 2 | 3 | 3 | 0 | 0 | 1 | 0 |
| | Middle | 0 | 0 | 1 | 0 | 0 | 3 | 6 | 1 | 6 | 0 | 0 | 1 | 2 | 0 |
| | Ring | 0 | 0 | 2 | 1 | 1 | 4 | 6 | 0 | 4 | 1 | 0 | 0 | 1 | 0 |
| | Little | 1 | 0 | 1 | 1 | 0 | 2 | 6 | 0 | 6 | 1 | 1 | 1 | 0 | 0 |

CHILDREN.

| | Degrees | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right | Index | 0 | 0 | 0 | 0 | 5 | 6 | 11 | 4 | 5 | 1 | 1 |
| | Middle | 0 | 0 | 0 | 0 | 2 | 4 | 14 | 4 | 5 | 2 | 2 |
| | Ring | 0 | 1 | 3 | 2 | 4 | 5 | 8 | 4 | 3 | 1 | 2 |
| | Little | 0 | 1 | 3 | 2 | 4 | 5 | 7 | 2 | 3 | 3 | 3 |
| Left | Index | 0 | 0 | 1 | 1 | 1 | 5 | 11 | 5 | 3 | 2 | 4 |
| | Middle | 0 | 0 | 1 | 1 | 0 | 2 | 9 | 8 | 4 | 4 | 4 |
| | Ring | 1 | 0 | 2 | 3 | 3 | 2 | 7 | 5 | 4 | 3 | 3 |
| | Little | 1 | 0 | 1 | 2 | 1 | 2 | 11 | 3 | 5 | 4 | 3 |

Table showing flexibility of the last two joints of the thumbs:

MEN.

| | Degrees | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right thumb | | 0 | 0 | 0 | 3 | 3 | 1 | 3 | 2 | 3 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 5 | 4 | 1 | 0 | 2 |
| Left thumb | | 1 | 1 | 0 | 0 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 2 | 0 | 0 | 1 | 0 | 0 |
| | | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 2 | 6 | 2 | 1 | 4 | 1 | 0 |

CHILDREN.

| | Degrees | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right thumb | | 1 | 1 | 5 | 7 | 4 | 5 | 3 | 2 | 1 | 3 | 0 | 0 | 1 | 0 | 0 |
| | | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 2 | 7 | 5 | 7 | 5 | 1 | 1 |
| Left thumb | | 0 | 1 | 3 | 7 | 6 | 5 | 3 | 0 | 1 | 3 | 2 | 1 | 1 | 0 | 0 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6 | 7 | 6 | 3 | 5 | 1 | 3 |

The greatest spread of hands was marked out on paper and the angle made by thumb and little finger measured. The results are for the

MEN.

| Degrees | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 | 120 | 125 | 130 | 135 | 140 | 145 | 150 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right | 1 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 2 | 2 | 2 | 1 | 2 | 0 | 0 | 0 | 1 |
| Left | 0 | 1 | 0 | 3 | 1 | 5 | 3 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 0 |

CHILDREN.

| Degrees | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 | 120 | 125 | 130 | 135 | 140 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right | 1 | 1 | 0 | 3 | 3 | 2 | 6 | 5 | 1 | 4 | 2 | 2 | 1 | 0 | 0 | 0 |
| Left | 0 | 1 | 0 | 1 | 3 | 2 | 7 | 4 | 2 | 1 | 1 | 4 | 1 | 1 | 2 | 1 |

The right and left swing of the hand at the wrist was also marked out and the angle taken. The results are for the

MEN.

| Degrees | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right | 2 | 1 | 1 | 1 | 1 | 3 | 0 | 4 | 3 | 0 | 3 | 0 | 1 | 0 |
| Left | 0 | 2 | 1 | 1 | 1 | 2 | 4 | 3 | 2 | 1 | 0 | 1 | 1 | 1 |

CHILDREN.

| Degrees | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Right | 1 | 0 | 5 | 4 | 5 | 6 | 3 | 3 | 4 | 0 | 1 | 0 | 0 | 0 | 1 |
| Left | 0 | 0 | 7 | 3 | 4 | 6 | 3 | 2 | 2 | 1 | 1 | 3 | 1 | 0 | 0 |

Individual cases are of interest. This one is given in detail: J. L. is a bright boy of seven. As were each of the others he was already acquainted with the writer and was very curious to see the "new machines" as well as to show what he could do. His grip with the right hand was thirteen pounds, with the left ten. The widths of his hands were 6.1 cm. and 6.0 cm.; length of long fingers 7.2 cm. each. The forward and backward movements of the wrists were 74° and 74° for the right, 74° and 64° for the left. He closed each knuckle of the right hand 75°; the first two of the left hand 75°, and the last two 77°.

The movements of the first interphalangeal joints of the right hand were 102°, 102°, 102°, and 97°; for the left 108°, 108°, 108°, and 94°. For the second interphalangeal they were on the right hand 82°, 82°, 67°, and 67°; on the left 67°, 82°, 72°, and 72°. The right thumb measurements were 42° and 57°; the left the same. The spread of the right hand was 100°; of the left the same. The right wrist had a side movement of 60°; the left of 80°.

Flexibility of different joints shows so much variation that a better classification may be obtained by summing up the flexibility of all of these joints and tabulating results in the nearest twenty-five degrees.

RIGHT HAND.

| Degrees | 1200 | 25 | 50 | 75 | 1300 | 25 | 50 | 75 | 1400 | 25 | 50 | 75 | 1500 | 25 | 50 | 75 | 1600 | 25 | 50 | 75 | 1700 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Men | 0 | 0 | 0 | 1 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 3 | 2 | 2 | 2 | 0 | 1 | 1 | 1 | 0 | 1 |
| Children | 1 | 0 | 1 | 1 | 2 | 3 | 4 | 2 | 4 | 1 | 4 | 3 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

LEFT HAND.

| Deg. | 1200 | 25 | 50 | 75 | 1300 | 25 | 50 | 75 | 1400 | 25 | 50 | 75 | 1500 | 25 | 50 | 75 | 1600 | 25 | 50 | 75 | 1700–1875 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Men | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 4 | 0 | 4 | 0 | 1 | 2 | 1 | 1 | 1 | 1– | 0 |
| Children | 1 | 0 | 2 | 0 | 2 | 2 | 2 | 4 | 2 | 0 | 3 | 1 | 3 | 2 | 1 | 2 | 2 | 1 | 1 | 0 | 1– | 1 |

Nearly 70 per cent. of the children and 35 per cent. of the men are below 1475° for the right hand; while for the left nearly 55 per cent. of the children and 40 per cent. of the men are below the same point. These results, as has been said, do not show any definite relation to strength of hand from individual to individual. In the majority of the cases cited, the relation suggested holds between the hands of the same individual. A small majority of all of the subjects had greater strength in the wider hands as well as greater flexibility.

For the wrist joint the men excel the children. If 65° is taken as a dividing line, 20 per cent. of the men fall below it in the forward movement of the right wrist, while nearly 50 per cent. of the children are below it. For the same movement of the left wrist, 15 per cent. of the men fall below it and 33⅓ per cent. of the children.

For the metacarpophalangeal joints 85° is, with not more than 7 per cent. exception, the limit for the children, while from 35 per cent. to 50 per cent. of the men exceed the same degree. For the first interphalangeal joints 50 per cent. or more of the men reach or pass the limit of 105°, while with but one joint only, do more than 50 per cent. (17) pass this degree.

For the next joints more than 50 per cent. of the men are 65° or less. For one finger only, do the nearly 50 per cent. (16) of the children approach the same limit.

Twenty-five per cent. of the men fall below 60° in the movement of the metacarpophalangeal joint of the right thumb, while nearly 78 per cent. of the children are below the same limit. Much the same relations hold for the other joints of the thumb, except the last joint of the left thumb, where the advantage is in favor of the children.

Only 5 per cent. of the men fell below 90° in the greatest spread of the right hand, while nearly 30 per cent. of the children were below this limit. For the left hand the advantage is with the children. For the side movement of the wrists the percentage is on the side of the men. The general result of the greater voluntary control of the muscles by men leaves unexplained the difficulty which adults meet in trying to learn new movements. Habit and differences in development of the central nervous system, as well as interest and freshness, are doubtless factors to be taken into account.

I am indebted to Pres. Hall for calling my attention to this problem, and to both him and Dr. Sanford valuable suggestions in the study. Acknowledgments are due to those who have served as subjects, and to the Worcester school authorities for permission to test the children.

JOHN A. HANCOCK.

## A BIT OF CHILD STUDY.

The Superintendent of the Sioux City (Iowa) Schools recently sent out to his primary teachers the following suggestions and story:

### CHILD STUDY.

Purpose: to gain an insight into children's ideas of conduct and punishment.

Teachers having senior first, junior second and senior second pupils, will please provide each of them with a pencil and a half sheet of scratch paper, on which has been placed the name of school building, age and grade of pupil.

Read over twice to such pupils the following story, and then ask them to write answers to the two questions given at the close of the story. Do not aid the pupils or try to influence their thought. Endeavor to secure an unprejudiced expression of their ideas of proper conduct and punishment. Return the answers to the Superintendent not later than May 20.

### STORY.

Little Charlie, one day in school while all the children were busy on their number work, threw down his pencil and said in a loud, cross voice, "It's no use, I can't do this number work."

The children all looked up and were very much surprised that anyone should talk out loud in that cross way.

His teacher said pleasantly, "Don't give up, Charlie. Please try again. I'm sure you can do it."

Charlie said, in a defiant way, "I don't care, I won't try again."

What do you think of Charlie?

What should the teacher have done with him?

Answers were received from 1,021 pupils, which were tabulated as follows:

### TABULATED RESULTS OF CHARLIE STORY.

*Junior First Grade. Average age about 5.5 years.*

Seventeen Junior Firsts all agreed that Charlie was a bad boy. They were not so unanimous as to what the teacher should have done with Charlie; 8 said "whip him"; 2, "scold him"; 2, "send him from school"; 1 each, "coax him," "talk to him," "be kind to him," "spank him," and "expel him."

*Senior First Grade. Average age about 6 years.*

Two hundred and eighty-three Senior Firsts thought of Charlie as follows: 191 said "Charlie was a bad boy"; 64, "a naughty boy"; 18, "a mean boy"; 1 each, "not a very nice boy," "not right," "was mad," "very, very bad boy," "not very nice,"

"don't think much of him," "a cross boy," "pretty bad boy," "an awful disgraceful boy," "he must be a scamp."

Their opinions of what the teacher should have done with Charlie were as follows: 200 were in favor of whipping, licking or spanking him; 31 said "punish him"; 11, "scold him"; 7, "shake him"; 4, "send him home"; 5, "keep him in at recess"; 3, "send to principal"; 3, "ought to have put him in baby room"; 1 each, "ought to do something," "Charlie ought to be ashamed," "ought to get his lesson," "stand on floor," "sit in a chair," "make him mind," "take him down and spank him," "whip and send home to his mother," "whip and shut him in a closet," "give him an awful whipping," "suspend him," etc.

*Junior Second Grade. Average age about 6.5 years.*

Two hundred and sixty-seven Junior Seconds thought the following about Charlie: 172 said "Charlie was a bad boy"; 32, "a naughty boy"; 14, "a lazy boy"; 10, "he was cross"; 6, "he was rude"; 6, "he was mean"; 5, "he was not very nice"; 3, "he did not want to learn"; 2, "he was wrong"; 2, "he was not polite"; 2, "he was very angry"; 1 each, "not a very smart boy," "don't think much of him," "didn't like his teacher," "ought not to have given up, but try again," "he wasn't right."

About Charlie's punishment they held the following opinions: 143 said "Charlie ought to be whipped, spanked or licked"; 23 said "scold him"; 19, "stay after school"; 12, "send to principal"; 11, "punish him"; 8, "send him home"; 7, "ought to make him work"; 5, "set him in a corner"; 3, "make him write 'I must behave myself'"; 3, "ought to expel him"; 3, "ought to make his self do it"; 2, "ought to tie him up"; 1 each, "put in a lower room," "whip and keep him in at noon," "whip and send to the Reform School," "tell his mother," "tell his parents," "stand him on the floor," "stand him on the seat," "stand him on the teacher's desk," "teacher should have given him an easy one," "tell him not to do it again," "put soap and water in his mouth," "what has a boy a teacher for?"

*Senior Second Grade. Average age about 7 years.*

Three hundred and forty-five Senior Second pupils entertained the following opinions of Charlie: 222 said "Charlie was a bad boy"; 53 said "he was a naughty boy"; 14, "he was not very polite"; 10, "lazy boy"; 6, "was impudent"; 7, "was rude"; 7, "was mean"; 6, "was cross"; 4, "was wrong"; 3, "did not want to try"; 2, "a funny boy"; 1 each, "didn't try hard enough," "was disappointed," "was very disobedient," "was ill-tempered," "was crazy."

Concerning Charlie's punishment they expressed themselves as follows: 246 said "Charlie ought to have been whipped, licked or spanked"; 22 said, "teacher ought to have made him do it"; 19, "he ought to have been punished"; 11, "should have been scolded"; 6, "sent him home"; 5, "shaken him up"; 5, "ought to have marked him off on his card"; 3, "sent into hall"; 3, "should have punished him severely and made him try again"; 3, "sent him out of school"; 3, "ought to have put him in a lower grade"; 2, "talked kindly to him"; 2, "whipped and sent him home"; 2, "ought to have sent him home and wrote a note to his mamma"; 2, "sent to principal"; 1 each, "given him a little slap," "taken him into hall and shaken him up," "stand on floor," "make him stay after school," "told him to go to work," "expelled him," "should

have talked to him," "sent him home and made him stay there until he would be good."

*Junior Third Grade. Average age about 7 years.*

One hundred and nine Junior Third pupils expressed the following opinions of Charlie: 57 said "Charlie was a bad boy"; 20 thought him "a naughty boy"; 10 thought him "mean"; 5, "very rude"; 2, "mad"; 1 each was "foolish," "lazy," "unkind."

In regard to Charlie's punishment they were of the following opinions: 69 favored "whipping, licking or strapping," one putting it "a good, sound whipping"; 12 said "punished him"; 4, "scolded him"; 2, "loved him"; 2, "talked to him"; 3, "expelled him from school"; 2, "ought to have made him try again"; 1 each, "told him not to talk out loud," "showed him how," "sent him out in hall," "shaken him," "been kind to him," "made him pack up his books and go home."

Several answers, because of their uniqueness, are given entire. In Senior First grade a little girl of seven said: "I thought Charlie was a naughty boy, and I thought the teacher was very kind to Charlie. She ought to of whipped him and scolded him and maked him do it any way."

Another Senior First pupil wrote: "Charlie was a bad boy to say 'I won't' to his teacher, when all the other children were doing number work. The teacher ought to have whipped him and sent him home to his mother, and his mother ought to have whipped him and scolded him and make him go to bed and stay all day and he would not do it any more in school."

A Junior Second pupil, aged eight, wrote, "I think he was a very bad boy, and I think he ought to have been slapped. I never did that in my life. She ought to have whipped him, I think. Don't you?"

Another Junior Second pupil said: "I think Charlie was the very baddest he could have been. I think Charlie's teacher ought to whipped him very hard. I think he will never get to be a lawyer."

## HOW THE MAN GOT IN THE MOON.

By Miriam B. Levy.

One evening my cousins, boys, aged four and five respectively, were sitting by me in my window. Suddenly the elder of the two saw the moon rising, as he termed it, over the power house, some few blo cks from home, but which can be seen from my window. Then he saw it travel and soon it was nearly overhead. "Oh," he exclaimed, "what a big moon, and how quick it moves; and there is the man in the moon," all said in the same breath. "Well," I said, "if there is a man in the moon, how did he get there?" "He went up in that balloon that used to take people in it," was the prompt reply. "Do you think so?" I asked his brother. "Oh, no," he said, "he put a ladder on a high house and climbed in."

Thus the first thread of thought was unraveled in my mind and I proceeded to investigate. The majority of answers were obtained for me by a teacher in a primary school, and no pupil had any help whatever or time to ask anyone. Their answers were spontaneous and they were quite unconscious why they wrote on such a subject, thinking it was a language lesson.

I have arranged my results according to sex, age and activity. The upper row of figures to the right of each mode of getting there is boys, the lower, girls.

Total number of girls, 249; boys, 306; grand total, 555.

Besides these 555 answers, 5 children said simply "I don't know." When I say "no ideas" I don't mean they answered "I don't know," but they talked about everything but the right thing and arrived at no conclusion in the end.

NUMBER OF CHILDREN RESPONDING.

| Age. | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | To. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flew in | | | 1 | 3 | 5 | — | 3 | 3 | 3 | | | 18 |
| | | | — | 1 | 7 | 7 | 5 | 2 | 1 | | | 23 |
| Jumped in | | | 1 | 5 | 3 | 1 | 2 | | | | | 12 |
| | | | 1 | 2 | 1 | 2 | 2 | | | | | 8 |
| Climbed in | 1 | | 1 | 2 | 4 | 3 | 1 | 1 | | | | 13 |
| | 1 | | — | — | 10 | 2 | 1 | 1 | | | | 14 |
| Ran in | | | | — | — | | | | — | | | — |
| | | | | 1 | 1 | | | | 1 | | | 3 |
| Walked in | | | | — | — | — | | — | | | | — |
| | | | | 1 | 1 | 2 | | 1 | | | | 5 |
| By electricity | | | | | 1 | 2 | | 1 | 2 | 1 | | 7 |
| | | | | | — | — | | — | — | — | | — |
| Grew in | | | | 3 | 2 | 4 | 1 | 2 | | | | 12 |
| | | | | 6 | 8 | — | — | — | | | | 14 |
| Went up in a balloon | | 1 | — | 1 | 6 | 13 | 8 | 3 | 3 | | | 35 |
| | | — | 1 | 1 | 10 | 14 | 4 | 5 | 2 | | | 37 |
| Went up in a tower | 1 | — | | 1 | — | — | | | | | | 2 |
| | 1 | 1 | | 1 | 1 | 1 | | | | | | 5 |
| Went up in a wagon | 1 | | — | | 1 | — | — | | | | | 2 |
| | — | | 1 | | 2 | 4 | 1 | | | | | 8 |
| Because he was bad | | | | | — | 4 | 1 | 2 | 1 | | | 8 |
| | | | | | 2 | 2 | — | 2 | — | | | 6 |
| Born there | | | | | — | 15 | 5 | 1 | 1 | | 1 | 23 |
| | | | | | 2 | 3 | 3 | 1 | — | | — | 9 |
| God put him there | 1 | — | — | 2 | 3 | 10 | 4 | 1 | 11 | | | 31 |
| | — | 1 | 1 | 1 | 5 | 6 | 7 | 4 | 1 | | | 26 |
| When he died he went there | | — | | 1 | 1 | — | 2 | 2 | | | | 6 |
| | | 1 | | — | 2 | 4 | 1 | — | | | | 8 |
| He is an angel | | — | | — | 1 | 1 | | — | 1 | | | 3 |
| | | 1 | | 1 | 1 | 1 | | 1 | 1 | | | 6 |
| He is God | 1 | | | | 1 | — | 3 | | | | | 5 |
| | 1 | | | | 2 | 1 | — | | | | | 4 |
| No ideas whatever | | | 2 | 13 | 9 | 7 | 5 | 11 | 4 | 12 | | 63 |
| | | | 2 | 8 | 14 | 7 | 8 | 2 | 2 | 3 | | 46 |
| Think there is no man | | | | — | 3 | 3 | 11 | 6 | 6 | 2 | | 31 |
| | | | | 2 | 6 | 3 | 2 | 2 | 2 | — | | 17 |
| Scientific explanation | | | | | 3 | 3 | 12 | 7 | 4 | 6 | | 35 |
| | | | | | — | 4 | 3 | 4 | 3 | 1 | | 15 |

## WELLESLEY COLLEGE PSYCHOLOGICAL STUDIES.

Directed by MARY WHITON CALKINS.

### I.

### A. THE EMOTIONAL LIFE OF CHILDREN.

The attempt is here made to compare the emotional life of children not yet in school, with that of those who have spent about six years in the public schools. Of course the investigation touches only on prominent features of the complex emotional nature, and lays no claim to completeness. Yet its results suggest some important distinctions, and, in particular, lay fresh emphasis on the effect of training upon imagination and feeling. The inquiry has been conducted by means of a series of questions,[1] answered, in the case of the younger children, by the mothers, but by the older children for themselves. The children are chiefly from families of Pennsylvania German ancestry. The first group contains 75, and in the answers given some allowance must, of course, be made for the unconscious coloring given by the mothers to their reports. The second group includes 127 children from the secondary schools, whose ages vary from nine years, six months to fifteen years, seven months, with an average age of twelve years, one month. The older children belong, for the most part, to what are called the working classes, and differ somewhat, in environment, from the first group. The prevalence of fear among these children, and its dependence on age and sex, are shown in the following tables:—

TABLE I.

*Prevalence of Fear.* *a.* (Different Ages.)

| Children have | Under School Age. | | | | | | School Age. Average 12. | | Total Cases. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Under 3. | | Between 3-6. | | Total. | | | | | |
| No Fear | 9 | 39% | 6 | 11.5% | 15 | 20% | 1 | .8% | 16 | 7.9% |
| Fear | 14 | 61% | 46 | 88.5% | 60 | 80% | 126 | 99.2% | 186 | 92.1% |
| Total | 23 | | 52 | | 75 | | 127 | | 202 | |

[1]For list of questions cf. page 339.

*b.* (Boys and Girls.)

| Children have | Under School Age. | | | | | | School Age. | | | | | | Total Cases |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Boys. | | Girls. | | Total. | | Boys. | | Girls. | | Total. | | |
| No Fear | 8 | 17.4% | 7 | 24.2% | 15 | 20% | 1 | 1.7% | | | 1 | .8% | 16 |
| Fear | 38 | 82.6% | 22 | 75.8% | 60 | 80% | 57 | 98.3% | 69 | 100% | 126 | 99.2% | 186 |
| Total | 46 | | 29 | | 75 | | 58 | | 69 | | 127 | | 202 |

The noticeable feature of these summaries is the increase of fear with added years. Two-fifths of the children under three years and one-tenth of the children under six, but less than one-hundredth of the older children, are reported as having no fear. The supposed prominence of fear among girls is certainly not shown by the younger children, since a larger per cent. of girls than of boys, under six, are said to be fearless.

The mothers of the younger children were asked to classify the fears according to their sense-type. The results suggest that the prominence of sound-fear which has been noticed[1] is among very young babies, not among the next older children. The figures are these:—

Table II.

*Sense Types of Fear.* (Children under 6.)

| Ages. | Fear is of | | | | | | Totals. |
|---|---|---|---|---|---|---|---|
| | Sights. | | Sounds. | | Unclassified. | | |
| Under 3 | 14 | 66.6% | 5 | 23.8% | 2 | 9.5% | 21 |
| Between 3 and 6 | 62 | 61.3% | 16 | 15.8% | 23 | 22.7% | 101 |
| Total | 76 | 62.3% | 21 | 17.2% | 25 | 20.4% | 122 |

*Note.*—The figures refer not to the children, but to the numbers of their different sorts of fear. The per cents. in this, as in most of the following tables, are reckoned on the basis of the totals in the right hand vertical column.

One other inquiry, into the origin of the fears, was made in the case of the younger children only, for it was thought likely that the children who answered for themselves would have forgotten these beginnings of emotional experience. The results are these:—

[1] Cf. Tracy, "Psychology of Childhood," p. 29 (with references).

TABLE III.

*Explanations of Fear.* (Children under 6.)

| AGES. | FEAR IS | | |

The most interesting distinction here is that between real and imaginary objects. The fear of wild animals, which are known to children through stories of their cruelty or their ferocity, is one of the commonest types of imaginative fear. The influence of training is once more shown in the greater frequency of imaginary fears among the older children. The lessening of the fear of people and of things points, of course, to the widening of the experience. Interesting, also, as contradicting the ordinary view that girls are especially imaginative, while boys are usually prosaic and literal, is the slightly greater proportion of imaginary fears among the boys. The figures are these:—

TABLE IV. *b.*

*Objects of Fear.* (Boys and Girls.)

| SEX. | Imaginary Objects. | | Real Objects. | Total. |
|---|---|---|---|---|
| Boys | 136 | 55.9% | 107 | 243 |
| Girls | 136 | 54.4% | 114 | 250 |
| Total | 272 | | 221 | 493 |

From the complete lists of things feared by children of twelve, it appears that the boys show far more originality than the girls. Of 207 objects mentioned by 69 girls, there are only 38 different ones; while of 164 mentioned by the 57 boys, 48 are different. The exact figures in some prominent cases are the following:

TABLE IV. *c.*

*Different Objects of Fear.*

| OBJECTS. | OF GIRLS. (69.) | | OF BOYS. (57.) | |
|---|---|---|---|---|
| | Different Objects. | Total Number of Objects. | Different Objects. | Total Number of Objects. |
| Wild Animals | 10 | 115 | 16 | 107 |
| Common Animals | 8 | 31 | 6 | 16 |
| Nature | 5 | 25 | 6 | 13 |

This difference is an important one, because it falls into line with the ordinary assertion that women, whatever their critical and reflective power, are endowed with less originality, less power of initiation than men. The real question in the case of these children, as in regard to adults, is, of course, this: Is the lack of originality

fundamental and inevitable, or is it a result of training to inactivity, of more monotonous environment, and of more narrowing occupations? Our results furnish no answer to this question, for even among these children, the training of the girls, the choice of their associates, the character of the stories which they have read, and the nature of the ideals presented to them, have differed widely from those of the boys.

II

The second subject investigated, the affection of children for people, for animals, and for "things," gives highly unsatisfactory results, in the nature of the case, since love is the most complex and evolved, as fear is perhaps the simplest and most instinctive of the emotions. The question: "Are you especially fond of any one?" was accompanied by the suggestion of "parents or playmates," and in most instances the answers merely repeat and adopt the suggestion. The reasons given are mainly acknowledgments of favors received or of affection reciprocated, as "Good to me and love me," and "Brings me peppermints." One child recognizes the influence of propinquity in the reply, "Because she lives in our house," and a few admit the inexplicable nature of love, as in this answer of a three-year-old: "Why, I wike her, that's why I wike her."

In many of the answers to the questions about animals the children show that they have mistaken a natural interest in animals for stronger feeling. All in the second group, save one who gives no answer, claim to have an especial fondness for animals, but the animals they name, as, for instance, elephant and giraffe, are in some cases those to whom they can not actually be attached. More discrimination is shown in the answers given by the mothers for the younger children, and we may perhaps conclude from them that four-fifths of all little children have a fondness for living pets.

TABLE V.

*Fondness for Animals.* (Children from 3 to 6.)

| SEX. | Fond. | | Not Fond. | | No Answer. | | Total. |
|---|---|---|---|---|---|---|---|
| Boys . | 37 | 80.4% | 8 | 17.4% | 1 | 2.1% | 46 |
| Girls | 22 | 76.0% | 7 | 24.0% | | | 29 |
| Totals | 59 | 78.6% | 15 | 20.0% | 1 | 1.3% | 75 |

The horse is by far the most popular animal with boys and girls of both ages, but the greater preference is shown by the boys. There is really very little difference between the two goups, and very little between the boys and girls of six. There is, however, a marked difference between the boys and girls of twelve. The boys show a decided preference for out-of-door animals, 39% choosing the horse and farm-yard animals, while but 28% of the girls choose the same. A corresponding difference is seen in the choice of domestic pets, 70% by the girls, 55% by boys.

In response to the question, "Of what things are you especially fond?" we have a variety of answers. Table VI shows the preliminary classification:—

TABLE VI.

*Prevalence of Liking for Things.* *a.* (Different Ages.)

| AGES. | NUMBER OF CHILDREN WHO HAVE LIKING FOR | | | | | | | | | | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Animals. | | Food. | | Food, Things | | Things. | | No Answer. | | |
| Under 6 | 2 | 2.6% | 1 | 1.3% | 7 | 9.3% | 47 | 62.6% | 18 | 24.0% | 75 |
| 12 to 14 | 8 | 6.3% | 38 | 29.9% | 25 | 19.6% | 52 | 40.9% | 4 | 3.1% | 127 |
| Total | 10 | 4.8% | 39 | 19.3% | 32 | 15.8% | 99 | 49.0% | 22 | 10.8% | 202 |

*b.* (Children of 12 to 14.)

| SEX. | NUMBER OF CHILDREN WHO HAVE LIKING FOR | | | | | | | | | | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Animals. | | Food. | | Food, Things | | Things. | | No Answer. | | |
| Boys | 4 | 6.8% | 19 | 32.7% | 8 | 13.8% | 24 | 41.3% | 3 | 5.1% | 58 |
| Girls | 4 | 5.8% | 19 | 27.5% | 17 | 24.6% | 28 | 40.5% | 1 | 1.4% | 69 |
| Total | 8 | 6.3% | 38 | 29.9% | 25 | 19.6% | 52 | 40.9% | 4 | 3.1% | 127 |

Setting aside the animals, to which the preceding question referred, we gain from the full lists of things which are loved, the following summaries, which are given entire because they reflect so exactly the characteristics of the different ages and sexes. The figures refer to the number of distinct objects named.

TABLE VII.

"*Things*" *which are Loved.* *a.* (General.)

| AGES. | Flowers. | | Music. | | Sports. | | Study. | | Toys. | | Unclass. | | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Under 6 | 15 | 9.3% | 13 | 8.0% | 33 | 20.4% | 37 | 23.0% | 43 | 26.7% | 20 | 12.4% | 161 |
| 12 to 14 | 41 | 25.8% | 16 | 10.0% | 54 | 33.9% | 23 | 14.4% | 4 | 2.5% | 21 | 13.2% | 159 |
| Total | 56 | 17.5% | 29 | 9.3% | 87 | 27.1% | 60 | 18.7% | 47 | 14.6% | 41 | 12.8% | 320 |

*b.* (By Children Under 6.)

| Sex. | Flowers. | Music. | Sports. | Study. | Toys. | Unclass. | Total. |
|---|---|---|---|---|---|---|---|
| Boys | 8 8.2% | 5 5.1% | 21 21.6% | 27 27.8% | 28 29.0% | 8 8.2% | 97 |
| Girls | 7 10.9% | 8 12.5% | 12 18.7% | 10 15.6% | 15 23.4% | 12 18.7% | 64 |
| Total | 15 9.3% | 13 8.0% | 33 20.4% | 37 23.0% | 43 26.7% | 20 12.4% | 161 |

*c.* (By Children of 12-14.)

| Sex. | Flowers. | Music. | Sports. | Study. | Toys. | Unclass. | Total. |
|---|---|---|---|---|---|---|---|
| Boys | 10 13.7% | 3 4.1% | 35 47.9% | 13 17.8% | 2 2.7% | 10 13.7% | 73 |
| Girls | 31 36.0% | 13 15.1% | 19 22.0% | 10 11.6% | 2 2.3% | 11 12.8% | 86 |
| Total | 41 25.8% | 16 10.0% | 54 33.9% | 23 14.4% | 4 2.5% | 21 13.2% | 159 |

The decreasing love of study as children grow older is opposed to a common view of the interests of young children. In reality, their burning curiosity occasions a love for study none the less intense because it is not accompanied by a capacity for sustained attention. The growing interests in sports, the elimination of the liking for toys, and the increasing love for flowers are other signs of development.

The differences between boys and girls are in the same lines, though in lessened degree, among younger as compared with older children. The greater fondness of the girls for flowers and for music, and their smaller liking for sports, may be fundamental, but may also be effects of training and of custom. The interest in study among the boys, at first much greater, falls to a less important difference.

The reasons given show little self-analysis. They are very similar. Of flowers, the children say: "They are fragrant and look pretty;" of games: "It gives me pleasure," or "It is fun;" of music: "It is nice," or "I enjoy it." When the explanation is not a stereotyped one, the object chosen is commonly unusual, as in the case of the boy who likes children because he enjoys teasing them.

## III.

The dislikes of these children do not seem to incrsase as they grow older. There is little difference between boys and girls under six, but the older girls have either fewer dislikes, or more hesitation in expressing them, than the boys. All this appears from the following table, which considers only the prevalence of dislike for people.

TABLE VIII.

*Children's Dislike for People.*

| Children have | AGE UNDER 6. | | | 12-14 YEARS. | | | Total. |
|---|---|---|---|---|---|---|---|
| | Boys. | Girls. | Total. | Boys. | Girls. | Total. | |
| Dislike | 13 (28.3%)[1] | 8 (27.5%) | 21 (28.0%) | 23 (39.6%) | 14 (20.3%) | 37 (29.1%) | 58 |
| No dislike | 27 (58.6%) | 19 (65.5%) | 46 (61.3%) | 33 (56.9%) | 54 (78.2%) | 87 (68.5%) | 133 |
| Doubt[2] | 6 (13.0%) | 2 (6.9%) | 8 (10.6%) | 2 (3.4%) | 1 (1.5%) | 3 (2.2%) | 11 |
| Total | 46 | 29 | 75 | 58 | 69 | 127 | 202 |

The reasons given admit of classification, as those which do and those which do not imply reciprocal dislike.

TABLE IX.

*Reasons for Dislike of People.*

| AGES. | REASONS FOR | | | | | | | | Total. |
|---|---|---|---|---|---|---|---|---|---|
| | Recip'l dislike. | | Non-reciprocal. | | Unexplained. | | No Reason. | | |
| Under 6 | 9 | 42.8% | 5 | 23.8% | 3 | 14.3% | 4 | 19.0% | 21 |
| 12 to 14 | 19 | 51.3% | 18 | 48.7% | | | | | 37 |
| Total | 28 | 48.3% | 23 | 39.6% | 3 | 5.2% | 4 | 6.9% | 58 |

"Reciprocal dislike" is shown by such expressions as "hits me," "bad to me," "talks about me." Less personal explanations are, "naught screamer girl," "have bad habits." An explanation, whose altruism has yet an egoistic strain, is, "punched my baby's eyes out;" and an oracular response is the remark, "I have reasons." More than half of those who have no dislike for people explain that there is no cause for ill feeling; about one-sixth entertain no dislike because "it is wicked," or from other moral grounds, as for instance this, "God made them all." Some other explanations are given, among them that of the little time-server who says, "I do not exactly hate any one, because I like to be on good terms with them."

If those are excluded who mistake fear for dislike, only about half these children "dislike things." This result would seem an

[1] The per cents. are on the basis of the totals in the horizontal column.
[2] Includes those who give doubtful answers, those who mistake fear for dislike, and those who do not answer.

unlikely one if very little children were not known to be so generally friendly to their environment. As a matter of fact, less than one-third of the children under six, but fully three-fifths of the older ones, have dislikes for things. Yet the detested objects, as well as people, are significantly fewer than the parallel objects of affection, so that, whatever allowance is made for inaccuracy in the record, the feeling of dislike is at least shown to lack intensity. Friendliness and content, rather than hostility and dissatisfaction, seem thus to be the normal disposition of the child; his antagonisms and his cruelties are the results of carelessness and of undue self-absorption, rather than of distinct unkindness; and expansion of the friendly and happy impulses is more necessary than the repression of the unsympathetic and the discontented.

In spite of their small number, the objects of dislike are not easily classified, for the children seem to be more individual in their dislikes than in the other emotional activities, showing clearly that distaste is little subject to rules and conventions. The loss of individuality, occasionally noticed in the first school years, is not apparent here. The "things disliked" are, nevertheless, subject to a certain tabulation.

TABLE X.

*Objects of Dislike.*

| AGES. | OBJECTS. | | | | | Total. |
|---|---|---|---|---|---|---|
| | Food. | Painful Things. | "Moral" Things. | Work. | Unclass. and Unspec. | |
| Under 6 | 7 (30.4%) | 0 | 0 | 0 | 16 (69.5%) | 23 |
| Betw. 12-14 | 26 (33.7%) | 8 (10.4%) | 12 (15.6%) | 9 (11.7%) | 22 (28.5%) | 77 |
| Totals | 33 (33%) | 8 (8%) | 12 (12%) | 9 (9%) | 38 (38%) | 100 |

The classes speak for themselves. Distastes—in the literal sense—are first in the list. Among the unclassified objects are some apparent instances of æsthetic displeasure, and the absence of any corresponding cases among the likes suggests the occasional origin of the æsthetic sense in the consciousness of the unpleasing rather than through the delight in the beautiful. Two of these objects of possible æsthetic displeasure are mentioned by the youngest children; these are "dirt" and "tunnels." The explanation of this latter dislike points its æsthetic nature: "I can't see the pretty things in a tunnel." Among older children the dislike of "the street" because it is "so dusty," of "playing in the dirt," and of "torn clothes,"—may be grouped under the same head.

## IV.

A consideration of the moral ideals of these children is closely connected with the main purpose of our study, since the emotional factor is so significant in the moral consciousness, especially in that of children. The most remarkable feature of the following summary of the answers from younger children is the great prominence of the sense of wrong.

TABLE XI.

| AGES. | PREVALENCE OF SENSE OF RIGHT. | | Total. | OF WRONG. | | Total. |
|---|---|---|---|---|---|---|
| | Consc. of Right. | No Answer. | | Consc. of Wrong. | No Answer. | |
| Under 3 | 6 (26.0%) | 17[1] (74.0%) | 23 | 7 (30.0%) | 16 (70.0%) | 23 |
| Between 3-6 | 30 (57.7%) | 22 (42.3%) | 52 | 45 (86.6%) | 7 (13.4%) | 52 |
| Total | 36 (48%) | 39 (52%) | 75 | 52 (69.3%) | 23 (30.7%) | 75 |

More in detail, we may classify the lists of acts named "right," according as they refer to the characters of the actors themselves, as being "good," "truthful," "tidy," or "grateful;" or to activities affecting others, like "doing errands," "paying debts," "championing sister's cause;" or to religious duties, like "being quiet in church" and "loving God;" or, finally, to the negative virtues of avoiding such wrong doing as fighting, lying, swearing, stealing, smoking. Some of the virtues named, such as "playing with blocks" and "going to the seashore," defy classification.

TABLE XII.

*Acts named "Right."* *a.* (Different ages.)

| AGES. | Egoistic. | Altruistic. | Religious. | Negative. | Miscel. | Total. |
|---|---|---|---|---|---|---|
| Under 6 | 17 (21.2%) | 38 (47.5%) | 8 (10.0%) | 2 (2.5%) | 15 (18.7%) | 80 |
| Between 12-14 | 97 (27.0%) | 92 (25.6%) | 81 (22.5%) | 27 (7.5%) | 62 (17.2%) | 359 |
| Total | 114 (26%) | 130 (29.6%) | 89 (20.2%) | 29 (6.6%) | 77 (17.5%) | 439 |

*b.* (Boys and Girls, under 6.)

| SEX. | Egoistic. | Altruistic. | Religious. | Negative. | Miscel. | Total. |
|---|---|---|---|---|---|---|
| Boys | 9 (18.7%) | 23 (47.9%) | 3 (6.2%) | 2 (4.1%) | 11 (22.9%) | 48 |
| Girls | 8 (25%) | 15 (46.8%) | 5 (15.6%) | | 4 (12.5%) | 32 |
| Total | 17 (2.12%) | 38 (47.5%) | 8 (10%) | 2 (2.5%) | 15 (18.7%) | 80 |

[1] Of these, the idea of right and wrong is "just beginning" in the case of three.

c. (Boys and Girls, between 12 and 14.)

| Sex. | Egoistic. | Altruistic. | Religious. | Negative. | Miscel. | Total. |
|---|---|---|---|---|---|---|
| Boys | 48 30.2% | 30 18.8% | 31 19.5% | 20 12.5% | 30 18.8% | 159 |
| Girls | 49 24.5% | 62 31 % | 50 25 % | 7 3.5% | 32 16 % | 200 |
| Total | 97 27% | 92 25.6% | 81 22.5% | 27 7.5% | 62 17.2% | 359 |

This table indicates that the conception of religious duties is slight, while the realization of duty towards others is very prominent in children of six. As the child grows older he seems to give more attention to his own character and to religious duties which, also, are more personal. As before, the contrast between boys and girls is greater at twelve than at six and under, showing the effect of constantly diverging training. The greater inclination of the girls toward religious feeling, and the attraction of the boys to the combative virtues, are strong indications of two traditional errors of education: religious teaching is too exclusively reserved for girls, while on the other hand, sermons about characteristically boyish sins, fighting, swearing and the like, crowd out the no less necessary warnings against the temptations to selfishness, vanity and gossip, to which girls are more often subjected.

A similar summary of "wrong" actions gives the following results. Distinctions between girls and boys are unimportant, and therefore omitted, but it may be observed that the six years of school life seem to work more changes in the boys than in the girls.

Table XIII.

*Acts named "Wrong."*

| Ages. | Egoistic. | Altruistic. | Religious. | Negative. | Miscel. | Total. |
|---|---|---|---|---|---|---|
| Under 6 | 16 (12.5%) | 49 (38.2%) | 9 (7.0%) | 29 (22.6%) | 25 (19.5%) | 128 |
| Between 12-14 | 19 (5.1%) | 56 (15.1%) | 8 (2.1%) | 271 (73.4%) | 15 (4.0%) | 369 |
| Total | 35 (7%) | 105 (21.1%) | 17 (3.4%) | 300 (60.4%) | 40 (8%) | 497 |

Acts directly affecting others, here acts of unkindness, are evidently prominent still among the moral ideals of the younger children. Transgressions of religious ceremonial seem less important than the corresponding religious observances. The replies of the children are particularly refreshing, at this part of the investigation, guilelessly revealing the secrets of childish hearts and penetrating to the most intimate habits of the homes. "To show temper," "to hurt birdies," "to pull dollies' hair out," and "to wake baby on purpose," are characteristic faults. The pitiable environment of the children who number among the cardinal sins the crime

of "touching bric-a-brac" is clearly disclosed. The boy who thinks it wrong "for sister to take my candy" defines his morality, as Fichte says, in terms of rights rather than of duties. Finally, the child who counts it wicked to "to make rhymes without sense" has a career of literary reform wide open to him.

The general result of this study is, then, a fresh accentuation of the significance of training, for of every special conclusion, this inference seems to form a part. Even the emotional life, seemingly erratic and uncontrolled, is both limited and widened by the guiding influence of custom and of education. In a very real sense parents and teachers are responsible for children's hopes and fears, for their likes and dislikes, and for the nature of their moral ideals.

KATHARINE FACKENTHAL.

## B. EMOTIONS OF DEAF CHILDREN COMPARED WITH EMOTIONS OF HEARING CHILDREN.

This paper embodies the conclusions from a comparison of the emotions, fear, love and hate, and of the moral sense of forty deaf persons with the like emotions and the moral consciousness of as many hearing children. The comparison is given by a tabulation, with comments, of all their statements, followed by a reproduction of the papers of a congenital deaf-mute thirteen years old and of two hearing children of the same age. The inquiry relates, first, to the variety and scope of the answers given, but secondarily to the character of the replies.

The deaf children are pupils in the Iowa School for the Deaf, and to their instructors I am indebted for my material. The records of the hearing children were taken at random from a set of 200 obtained by Miss Fackenthal[1] for a more detailed study.

The ages of the deaf range from eleven years to twenty-three, while those of the hearing are from nine to fourteen: only eleven of the deaf are under fourteen years of age. However, judging from the data and from my experience as companion and teacher for thirteen years of the deaf and dumb, I venture to say that those between the ages of fifteen and twenty-three have not received any more years of instruction than those under fifteen years of age. It is true of deaf-mutes as well as of speaking children that they do not learn so easily or develop so rapidly if they enter school when quite advanced in age. Consequently throughout the comparison, this fact should be borne in mind, and the deaf-mute credited accordingly.

The questions[2] sent out were as follows:—

I. Fear.
   a. What do you fear most? (Name several things in order of intensity.)
   b. Why?
   c. Have you always been afraid of these things?

II. Love.
   a. 1. Do you love any *person* or *persons* very much? as parents, playmates?
      2. Why?
   b. 1. Do you love *animals?* (Name several in order of preference.)

[1] See page 319.
[2] Formulated by Miss Fackenthal

2. Why?
c. 1. What *things* do you love the most?
2. Why?

III. Hate.
a. 1. Do you hate any *person?*
2. Why?
b. 1. Do you hate any *thing?*
2. Why?

IV. Moral Sense.
a. Name three things which are wrong to do.
b. Name three things which are right to do.

V. What are you going to be when you are grown up?

The tabulation of the answers is as follows:

TABLE I. FEAR.

NUMBER OF OBJECTS OF FEAR.[1]

| | Robbers. | Animals. | | Ghosts | Nat're[2] | D'ng'rs | Misc. | Total[3] Imag'y | Total Real. | Total Obje's |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Wild | Dom'st | | | | | | | |
| Deaf | 19 | 75 | 17 | 3 | 6 | | 5 | 75 | 50 | 125 |
| Hear'g | 4 | 54 | 8 | 4 | 36 | 12 | 7 | 44 | 81 | 125 |

The number of objects of fear is thus exactly the same for both classes. The most interesting difference is the far greater number of imaginary fears on the part of the deaf, a result, probably, of the comparative isolation of their lives. A study of the different distinct fears (excluding cases of the repetition of the same object in several lists) shows that the deaf fear ninety-nine different objects, while the hearing fear ninety-two. This indication of greater originality on the part of the deaf is noticeable, because it seems to contradict the conclusions from the records of other sorts of emotional experience. It may probably be explained by the fact that so primitive and instinctive an emotion as fear is likely to have many manifestations in a relatively undeveloped consciousness.

All the children love persons, especially parents and playmates, and the reason given, in almost all cases, is the same: "Because they are kind to me." The summary which follows considers not the entire number of objects of love, but the different varieties of objects mentioned. Thus, thirty-five different kinds of animals are mentioned by the deaf, and only sixteen by the hearing, but the favorite animal, the horse, figures twenty-eight and twenty-nine times respectively in the lists. All classes of things loved "in common" appeal to the sense of taste, with the one exception of flowers, mentioned by eight hearing children and by only one deaf child. There are but two of the deaf who do not love "things to eat," while all, save one, of the hearing mention some things which appeal to the higher senses — facts which indicate the difference in development between the two classes. The figures are these:—

[1] It will be noticed that people, animals, etc., were not specified in the questions about fear as in the others.
[2] Under the head of "Nature" are included fire, thunder, lightning, blizzards, etc.
[3] Among imaginary objects have been classed wild animals (except snakes) and robbers. Snakes comprise about one-third of each "wild animal" class.

TABLE II. LOVE.

| | Different Objects of Love. | | | | | | Total Different Objects. |
|---|---|---|---|---|---|---|---|
| | Diff't Animals. | | Different Things. | | | | |
| | Total. | In Com | Objects of Taste. | Objs. oth'r Senses. | In Common. | Total. | |
| Of the deaf | 35 | 10 | 16 | 4 | 5 | 20 | 55 |
| Of the hearing | 16 | | 15 | 11 | | 26 | 42 |

The emotion of hate for people is not so frequent among the mutes, of whom only seven, as compared with ten hearing children, express the feeling. So the number of different things hated by hearing children almost doubles the record of the deaf. The objects of common hatred are four, including two animals and two objects of food: rats, snakes, fish, tea. The significant fact in the case of these objects of hate, as well as of love, is thus the greater diversity of the emotional life of the hearing children.

TABLE III. HATE.

| | Different Objects of Hate. | | | Total. Different Objects. |
|---|---|---|---|---|
| | Things. | | Abstracti'ns Mental and Moral. | |
| | Total. | In Common. | | |
| Of the deaf | 27 | 4 | 2 | 29 |
| Of the hearing | 43 | | 16 | 59 |

All the children, the deaf as well as the normal, have a "moral sense," but the hearing children again lead in the number of acts thought "right" or "wrong." There are only five acts which are classed as right by both deaf and hearing, and thirty of the forty deaf children adhere to these five, a striking illustration of the narrowness of their horizon. Their repertoire of wickedness is significantly larger, as is shown in

TABLE IV. MORAL CONSCIOUSNESS.

| | Different Objects of Moral Sense. | | | | Total Moral Acts. |
|---|---|---|---|---|---|
| | Right Acts. | | Wrong Acts. | | |
| | Total. | In Common. | Total. | In Common. | |
| Of the deaf | 13 | 5 | 14 | 9 | 27 |
| Of the hearing | 21 | | 22 | | 43 |

The full lists of "wrong" acts are added, of which the first is that of "wrong things to do," named by both mutes and normal children:

| | Number of deaf who name. | Number of hearing. |
|---|---|---|
| 1. To disobey, | 5 | 12 |
| 2. To drink, | 1 | 9 |
| 3. To fight, | 5 | 7 |
| 4. To kill, | 10 | 6 |
| 5. To lie, | 27 | 16 |
| 6. To retaliate, | 2 | 2 |
| 7. To steal, | 21 | 12 |
| 8. To swear, | 19 | 19 |
| 9. To be lazy, | 1 | 1 |

A list showing the peculiarities of both classes is the following, including:

a. Acts named wrong only by the deaf:—
   1. To break the Sabbath, (named by 11).
   2. To be cruel, (named by 3).
   3. To covet, (named by 1).
   4. To dance round dances, (named by 2).

b. Acts named by the hearing only:—
   1. To deceive, (named by 2).
   2. To fight, (named by 7).
   3. To go in bad company, (named by 3).
   4. To meddle, (named by 1).
   5. To get angry without cause, (named by 1).
   6. To tease, (named by 1).

The conclusions indicated by these figures are illustrated by three papers, which will be reproduced exactly as they were written by children of thirteen years. The first and last of these are by hearing children, the first a poor and the last a fair representative of the class. The second paper is by a deaf-mute, and it is but just to add that its writer has had superior advantages in private instruction, resulting in mental capacity beyond that of the other deaf children.

*Name, Lloyd W. Age, 13 years, 6 months.*

I. *Fear.* a. I fear to hear a cannon. b. It scares me when it goes off. c. I have always been afraid of it.

II. *Love.* a. 1. I am especially fond of my sisters and brothers and parents. 2. I like them because they are my brothers and sisters. b. 1. I am fond of horses, dogs and cats. c. 1. I am fond of drawing and hearing music.

III. *Hate.* a. 1. No. b. 1. Yes, to see boys fight.

IV. *Moral Sense.* a. Smoke, sware, and chew tobacco. b. Not to fight, or chew, or smoke.

V. I am going to be an engineer. Because I like to see machinery work and what the power of steam is.

*Name, Martha J. T.* (congenital deaf-mute). *Age 13 years.*

I. *Fear.* a. Fire; some animals. b. Because the fire will burn me and the animals could kill me. c. No.

II. *Love.* a. 1. Yes, I love some persons very much. 2. They have been very kind to me. b. 1. I love horses, dogs, sheep, lambs, hens and chickens. 2. Because they are strong—pretty—and cute. c. 1. I love a pretty home, flowers, trees, birds, green grass, and nice walks. 2. Because they make me happy.

III. *Hate.* a. 1. Yes. 2. I do not like to see the persons cross, quarrel, ugly face at me (make an ugly face). b. 1. I hate ugly things. 2. Because I like beautiful things.

IV. *Moral Sense.* a. To lie, to sneak, to be lazy. b. To study, to help people, and love God and people.

V. I am going to be married. Because I will have a beautiful home.

*Name, Charles I. Age, 13 years, 6 months.*

I. *Fear.* a. I fear an earthquake, tornado and thunder storms. b. I fear them because they sometimes kill people, and make them homeless. c. I do no (not) fear slight shocks of them.

II. *Love.* a. I like my playmates, and am very fond of my Parents. I like them because they play with me and I play with them, (2) and I like my parents because they give me all my wants. b. 1. I like the pug dogs, Newfoundland and water spaniels. c. I am fond of base ball, because it gives me enjoyment.

III. *Hate.* a. 1. I do not exactly hate any persons. 2. Because I like to be on good terms with them.

IV. *Moral Sense.* a. Three things wrong are to swear, to be vulgar, and smokeing. b. Three things right are manly, goodness, and shun bad company.

V. I am going to be a railroad man. Because my father was nearly all his life.

It is clear that the deaf girl, Martha T., surpasses both hearing children in the thought and in the expression of her paper. The difference is less marked between her and Charles I., yet his carelessness in spelling and his confusion of nouns and verbs in co-ordinate construction leave the palm with her. Indeed, as a general rule, the hearing are inferior to the deaf through careless spelling and through inaccurate repetition and omission of words. The most significant feature of Martha's paper is its manifestation of her appreciation of beauty, suggesting that the deficiency in æsthetic sense, already noticed in the deaf, might be remedied by careful training. The deaf child's explanations, also, are all given clearly and well, showing good reasoning power.

The confident assertion may be made that though in the variety of the objects of their imagination and their feeling, deaf-mutes are inferior to hearing children, yet in expression, in originality, and in reasoning ability, they compare favorably with the more fortunate, especially considering the difficulties which they encounter in their efforts to share the experience of others and to communicate their own thought.

MARY E. BOWLES.

### C. CHILDREN'S STORIES.

The stories of which this paper presents a study were written by children in the public schools of a Massachusetts town. The children were asked simply each to write a story on any topic whatever, so that the subjects as well as the stories are entirely original. Children in all departments of the school are represented, and the ages vary from three and one-half to fifteen years. The stories are grouped under four heads:

1. Stories written by children in the primary department, averaging six and one-half years.
2. Stories by scholars in the intermediate school, averaging nine years.
3. Stories by members of the lowest class in the grammar school, averaging eleven years.

4. Stories by children in the highest grammar school class, averaging fifteen years.

The total number of stories is 137, and there are about 30 in each set, except the first, which contains 48.

Considering, first, the choice of subject, it is found that there is a decided preference shown for subjects of real life, and that real and personal possessions and experiences hold by far the largest place. Out of the 48 stories written by the youngest children, 18 are about personal possessions and 12 about personal experiences. "My Kitty," "My Doll," "My Dog" and "Going after Mayflowers" are among the number. The remainder refer to possessions and experiences of others, as "Fanny's Doll" and "My Aunt's Baby," or else are on some general subject, like "The House." The subjects of the stories written by the next older children, those who are nine years old, show a somewhat different character. Out of 33 stories, only 7 are about personal possessions, "My Cat and Dog" and "My Little Sister;" 6 refer to personal experiences, "Mayflowers," "School," etc.; 6 are fairy tales, "Prince Rosetti" and "The Adventures of a Prince" among the number; 5 are on general subjects like "Trees," "Spring," "Summer," etc., and the rest are recitals of the experiences of friends or near relatives. In the next group, there is only one subject relating to a personal possession, in this case a beloved kitten; 17 are about personal experiences, and by far the greater number of these refer to some trip which the different children have taken at some time; 4 are on the general subjects, "Coal," "Trees" and "Baskets," and the remainder, as in the previous group, refer to the experiences of others. There is still one more group to examine as to choice of subject, namely, the stories of the oldest children. These do not seem to have the fondness for relating personal experiences and for telling about their own possessions which have been found so characteristic of the younger children. There are only 3 stories referring to personal experiences, the subjects being "Fishing" and "Quahauging," and only one which speaks of a personal possession, a bull-dog. The majority of these subjects are about people; among them might be mentioned "The Story of a Good Girl," "Two Mischievous Boys" and "A Bad Boy."

Merely a glance at a story is sufficient to determine whether it is written by a boy or by a girl. For instance, in the first group kittens and dolls seem to have the principal charms for girls, while the boys prefer dogs, especially if fighting, hunting woodchucks, chasing squirrels, and fishing. In the second group the girls still show a preference for kittens and dolls, though the former have now grown to cats. The subjects in this case are such as "My Cat and Dog" and "The Story of a Cat." The boys still enjoy fishing and write on other outdoor subjects, as sheep, tigers, base-ball, etc. It happens that in the third group the proportion of girls far exceeds that of boys, hence one cannot fairly judge concerning either, but as the figures stand, the same general conclusions might be drawn as from the previous group. It is a little singular and at the same time characteristic that these two subjects come side by side, "A Trip to Old Orchard" and "Sailing on a Raft." The trip might of course have been taken either by a boy or by a girl, but it is hardly necessary to label the second story as written by a boy. In the fourth group the girls have as a whole outgrown their kittens and dollies and turn their attention both to boys and to girls. Among the subjects are: "Story of Two Little Girls," "A Good Girl," "A Boy Who was Lost" and "Two Mischievous Boys." The boys, however, write about dogs, about horses and about themselves, but not in a single instance have they deigned even to mention a girl. A few of their

subjects taken at random are "A Bull-dog," "Story of a Horse" and "A Bad Boy."

Of the 137 stories, 16 are on nature-subjects; 39 are about animals, and 67 are concerned with people, including the writers themselves. The remainder would come under the general heads previously mentioned and under that of "dolls." The girls show a fondness for these, which far exceeds that of the boys for any one thing. The stories themselves show a general increase in length as the children grow older, and a general advance in method of treatment. There are few in the whole number which appear to be direct reproduction of stories read or heard, although there are more showing evidence of this in the oldest group than in the youngest; indeed there are none of the first group which appear to belong to this class. Nearly all stories are told quite seriously, in fact I think only two out of the whole number show any sense of humor. One belongs to a little boy in the primary department, and a portion of it reads as follows: "Once there was a squirrel that had three ears: two ears on his head, and one ear of corn in his mouth." The other is about a little boy who went fishing one day and caught a shad and a flounder. "The next day," as the little writer says, "he went again, and what do you suppose he caught?—He caught a ducking." The children do not deal with serious subjects at all, but tell their stories in a grave, earnest manner.

Regarding now the length of these stories and their structure, we find that those in the first group are very brief, varying from nine to sixty words; they can scarcely be said to have a plot, since they consist only of a few brief statements. Most of the stories in the second group have a certain plot and a definite climax; they are all considerably longer than those of the first set. The third group resembles the second, and the stories of the fourth show a further development: they have a real aim and are usually descriptions, though sometimes in narrative form.

In the following tables the most important of these results are summarized:

I. Classification of Subjects with Reference to Age of Children.

| Ages. | Subjects. | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | Pers'l Possession | Pers'l Exp'ces. | Possessions of Others. | Exp'ces of Others. | Fairy Subjects. | General Subjects. | |
| Av. 6½ yrs | 18=37.5% | 12=25.0% | 2= 4.1% | 11=22.9% | 0 | 5=10.4% | 48 |
| " 9 " | 7=21.2% | 6=18.1% | 1= 3.6% | 8=24.2% | 6=18.1% | 5=15.1% | 33 |
| " 11 " | 1= 3.8% | 17=65.3% | 1= 3.8% | 3=11.5% | 0 | 4=15.3% | 26 |
| " 15 " | 1= 3.3% | 3=10.0% | 5=16.6% | 21=70.0% | 0 | 0 | 30 |
| Total | 27=19.7% | 38=27.7% | 9= 6.5% | 43=31.3% | 6= 4.3% | 14=14% | 137 |

## II. Comparison of Subjects chosen by Boys and by Girls.

| Ages. | Subjects. | | | | | |
|---|---|---|---|---|---|---|
| | Pers'l Possessions. | | Pers'l Experiences. | | Possess'ns of Others. | |
| | Boys | Girls | Boys | Girls | Boys | Girls |
| Av. 6½ yrs | 8=32.0% | 10=43.4% | 8=32.0% | 4=17.3% | 5=20.0% | 8=34.7% |
| " 9 " | 2=10.5% | 5=35.7% | 3=15.7% | 3=21.4% | 7=36.8% | 2=14.3% |
| " 11 " | 0 | 1= 5.0% | 4=66.6% | 13=65.0% | 0 | 4=20.0% |
| " 15 " | 1= 8.3% | 0 | 2=16.6% | 1= 5.5% | 9= 75% | 17=94.4% |
| Total | 11=17.7% | 16=21.3% | 17=27.4% | 21=28.0% | 21=33.8% | 31=41.3% |

| Ages. | Fairy Subjects. | | General Subjects. | | Totals. | | Total Subjects. |
|---|---|---|---|---|---|---|---|
| | Boys | Girls | Boys | Girls | Boys | Girls | |
| Av. 6½ yrs | 0 | 0 | 4=16.0% | 1= 4.3% | 25 | 23 | 48 |
| " 9 " | 5=26.3% | 1=7.14% | 2=10.5% | 3=21.4% | 19 | 14 | 33 |
| " 11 " | 0 | 0 | 2=33.3% | 2=10.0% | 6 | 20 | 26 |
| " 15 " | 0 | 0 | 0 | 0 | 12 | 18 | 30 |
| Total | 5= 8.0% | 1=1.33% | 8=12.9% | 6= 8.0% | 62 | 75 | 137 |

A brief study has been made of the language of the stories, leaving out of regard, however, the stories of the third and fourth groups, since their authors show an understanding and use of language differing only in slight degree from those of adults. In the stories of the younger children, the parts of speech used are mainly nouns and verbs, and more of the former. These nouns are almost without exception the names of persons and of familiar objects. Pronouns, chiefly personal, hold the next place, followed by articles, adjectives and prepositions. The adjectives refer generally to size and to beauty, "large" and "pretty" playing a very prominent part. Conjunctions are very rare; more than half the stories written by the youngest children are quite guiltless of them.

In the following table a summary in per cents. of the parts of speech used by these youngest children is compared with Mr. Tracy's summary[1] of the language of children under three years, and with the statistics of adult language, which he quotes from Mr. Kirkpatrick.

[1] "Psychology of Childhood," page 81.

Mr. Tracy's conclusions are based on a study of 5,400 words; ours, which are drawn from the observation of only 500 words, written, not spoken, are not of any demonstrative value, but may be suggestive.

| | Nouns. | Verbs. | Adjectives | Adverbs. | Pronouns. | Prepositions. | Conjunctions. | Interjections. |
|---|---|---|---|---|---|---|---|---|
| Babies (T) | 60.0% | 20.0% | 9.0% | 5.0% | 2.0% | 2.0% | 0.3% | 1.7% |
| Average 6½ yrs. (E) | 27.8% | 17.7% | 17.4% | 5.8% | 17.1% | 7.9% | 0.6% | 0 |
| Adults (K) | 60.0% | 11.0% | 22.0% | 5.5% | | | | |

The smaller per cent. of nouns on our lists, as compared with Mr. Tracy's, is partly due to the fact that pronouns, which are almost lacking in the vocabularies of the very youngest children, but which are prominent in our stories, may virtually be classed as nouns. The rarity of nouns as compared with the proportion of nouns in the language of adults, in connection with the large proportion of verbs, shows forcibly the greater importance of verbs in a child's vocabulary. This conclusion confirms that of Mr. Tracy's study.

SUSIE W. EATON.

## D. CHILDREN'S DRAWINGS.

This paper gives the results of a study of children's drawings, on exactly the lines of the investigation already reported by Professor Earl Barnes in the PEDAGOGICAL SEMINARY of December, 1893. Records were received from 451 children, of whom about 125 lived in a New England country town, and the rest in Washington, D. C. There are twice as many girls as boys, and all ages are represented. The poem selected by Professor Barnes, "Johnny Look-In-The-Air," was read to the children, who were told to draw one or more pictures illustrating the story. 1,324 different pictures were drawn, including scenes and separate objects. From seven to twenty or twenty-five minutes were spent on the drawing.

Inquiring, first, the subject of greatest interest to the children, we find that about one-sixth (15.1%) of all the pictures represent Johnny meeting the dog, that about one-twelfth (8.6%) depict the hero floating in the river, and that nearly one-tenth (9.1%) portray his rescue; while only one-sixteenth (6.2%) concern themselves with his approach to the river. These boys and girls therefore agree, for the most part, with Professor Barnes's children in that they are more interested in the scenes just before and just after the crisis than in the catastrophe itself. The rescue scenes, however, are only slightly more numerous than the sketches of Johnny falling into the water—occurring only one-third more often, instead of twice as often, as in the California drawings. The prominence of the scene may also be explained in part by its close connection with the favorite floating-in-the-river picture, of which it is an obvious continuation. On the whole, then, Professor Barnes may not be justified in drawing from this fact the conclusion that "in children the feeling of mercy and helpfulness is much more prominent than the desire to destroy."

Boys and girls generally follow the same lines of interest and development: the boys express themselves a trifle more fully than the girls, but the difference is small.

In the collation of the drawings to verify Professor Barnes's conclusions about the drawing of full faces and of profiles, the representations of the rescuers, as well as of Johnny, were considered—1,313 faces in all. The following table shows the increase in the use of profiles:—

| AGES. | 5 to 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|
| Per cent. of profiles | 9.5% | 15.6% | 35.7% | 63.7% | 53.5% | 69% | 59.6% | 67.3% | 68.7% |

Among children of nine years and more, the profile seems to be established, though with fluctuations, due perhaps to accidental causes. A transition period, in which a profile is enriched with two eyes and with the nose and mouth characteristic of a full face, is observed in the drawings.

From the transparent and diagrammatic figures of the early pictures, there is a steady advance to such regard for reality as is shown in the pictures which draw Johnny floating in the water in profile, while the rescuers, looking toward the river, have full faces; or in those which, illustrating Johnny's fall, have drawn only his legs and part of his body as he is disappearing into the river. The absence of decoration, the undue enlargement of Johnny's figure and other characteristics of the pictures, show clearly that drawing is a language to these children, employed not to imitate nor to please, but to express meanings.

Most of the conclusions from this shorter study are thus corroborative of those of Professor Barnes, though these pictures seem to show more traces of logical arrangement and do not indicate any strong instinct of humanity. The suggestion that the study of drawing should usually be begun at about nine years—after the diagrammatic and before the self-conscious age—is certainly confirmed by our observation.

MARY A. HERRICK.

### E. NOTES ON THE FIRST THREE YEARS OF A CHILD.

Like all sciences, psychology depends largely in its advance upon the multiplication of accurate observations and records of individual instances; and, in the nature of the case, this is especially true of child-psychology, whose data are still very few, when judged in the light of the important conclusions which are reached through them. This paper embodies the most significant results of the observation of a child, known to the writer, compared with the parallel records of Preyer, Darwin, Miss Shinn, Polluck, Taine and Tracy.

The child, who will be called Allen, is a healthy boy of American parentage, now three and a half years old. He has been carefully trained, with especial avoidance of any forcing of childish abilities or accomplishments. The records were made by the mother, who has been a teacher and is interested in scientific subjects, but many of the facts recorded have been observed by the writer, who is intimately acquainted with the family. The records were made with no thought of publication, and therefore most of them were several days, or even weeks, later than the events recorded. Nothing, however, was recorded of which the mother was not absolutely sure, and dates were *never assigned by guess*, without some certain date from

which to reckon. The accuracy of the record should be emphasized; in questioning the mother, I was particularly impressed with her conscientiousness in giving no dates at all unless she was sure of the correctness of them.

*Imagination.* In his plays Allen has shown little of the imagination which is so often revealed in children's amusements. The first marked instance is that shown when he was thirty-four months old, by his interest in the plans of a new house. His intelligent questions and explanations convinced me that he recognized the significance of quadrilaterals, as representing rooms or closets, and of indentations, as standing for doors and windows.

*Memory.* Allen's memory seems to be unusually developed. Preyer says that an effort was made, but without great success, to lead his child to memorize. No attempt was ever made to teach this child any words except those of a prayer. He has learned by hearing rhyme or story frequently told or read.

At seventeen months he could give the italicised words of the following story: A little boy named *Allen* went out to ride; he saw some *birdies* up in tree. A *kitty* came along, ran up the tree to catch *birdies*, but they flew away; then a big dog came along and said *bow*-wow. Kitty was afraid to come down, but a man drove dog away, and Allen came home and told his *mamma*.

Tracy[1] gives the record of a child of eighteen months who knew the last word of many Mother Goose melodies, putting them in at the right time. After his Mother Goose rhymes were read to him, and before he was two years old, Allen could give the end words of all the Mother Goose rhymes and of many more. He would also correct the slightest mistake made in the middle of the line, showing that he knew the whole of the poems. His mother occasionally forgot and needed his prompting, and his grandfather often purposely made slight changes in the words to test him, but I think he never failed to notice and correct.

His mother has always been in the habit of reading her favorite poems and psalms to the child, and when twenty-four and a half months old, he could repeat an eight-verse stanza—the first—of the Vision of Sir Launfal. Many of the words were pronounced indistinctly, but he certainly approximated a pronunciation of them all. In his thirtieth month, as he was one morning talking to himself, his mother asked him what he was saying. "A little psalm," he answered, and thereupon, with only a few pauses for assistance, repeated the twenty-third psalm. At three years and a half, he can repeat, with very little assistance, Longfellow's "Bridge," Tennyson's "Brook," Whittier's "Barefoot Boy" and "Rainy Day"; and he invariably corrects the slightest mistakes when the poems are read to him. He has a visual as well as an auditory memory, for whenever he sees a picture in another book, which is duplicated in one of his own, he turns unhesitatingly to the picture in the correct one of his thirty or forty books.

*Reasoning.* Apparently, Allen's memory is not active at the expense of his reasoning power, for he shows great interest in mechanical contrivances. He has asked about every screw and wheel in the mechanism of the steam radiator and the electric lights. His own accounts of them are not mere parrot-like repetitions of what has been told him, but show that the explanations have conveyed real meaning to him.

*Emotional and Moral Consciousness.* The emotional life of this child presents a few marked characteristics, with others which have

[1] "Psychology of Childhood," p. 72.

been often noticed in children. Though he is an affectionate child, he lacks the generosity and jealousy manifested by Darwin's baby.[1] He has had very few fears—differing, in this respect, from Preyer's[2], from Polluck's[3] and from Darwin's child[4]; and he has never shown a trace of anger, unlike the Darwin child[5], who exhibited anger at four months. Though he does not show the pleasure of Darwin's[6] and of Preyer's[7] child, in music, yet certain observations seem to point to a real æsthetic appreciation. Allen always wishes to undress in the dark, that he may see the moon and the stars, and apparently he has real pleasure in watching them. He knows that the moon in Longfellow's "Bridge" is the same moon he sees in the sky. There is a window at the landing of the stairs, where a fine view of the surrounding country is obtained. He always wants to stop when going upstairs to look out, and calls one's attention to the changing clouds, or to the hill outlined against the sky. Especially in the spring of his third year has he observed the changes in the landscape. When driving he particularly notices the outline of distant hills against the sky. His attention has of course been directed to the beauties of the landscape at some time, for his mother has a keen æsthetic appreciation, but from the interest which he shows in new places and new landscapes, it has seemed to me that there were some elements of an æsthetic sense. The sunsets are his especial delight. He called to me to come to the window to see the pretty sky, and when I asked him what he saw he said: "See those clouds with dark places between them and that gold up there." I asked of what color the clouds were, and he answered: "Reddish pink," which was a good description, although I think the word may have been chosen at random from his color names. He often calls one to see a fleecy cloud floating across a blue sky.

His moral sense seems to be developed early; Darwin's child[8] at two years and a half showed as great an appreciation of right and wrong, but gave evidence of deceitfulness, which has not been seen in Allen.

*Motor Activities.* In his record of motor activities, Allen differs a little from the other children observed. His first word was spoken in his eleventh month, and in his twentieth month he had an extensive vocabulary. Some time before his twenty-fourth month, he made sentences. Thus he talked between two and three months earlier than either Taine's, Polluck's or Preyer's child. From a comparison with Preyer's records,[9] which are the fullest, it appears that his baby could repeat at twenty months only such words as *pap-a*, *bit*, *otto*, while Allen, at the same age, had a very full vocabulary. It should, however, be observed that Preyer's child understood what was said to him long before he could talk at all, while Allen probably began to talk quite as soon as he could understand. Polluck's child began to talk three months later than Allen, but seems to have been nearly as far advanced at twenty months.

Allen's ability to draw seems also to be developed early, for though Preyer says that "an average child cannot draw an approximately circular line returning on itself till after the third year," he drew such lines for kisses when he was twenty-eight months old. At three years he copied pitch-roofed houses with windows and doors, which his mother drew for him.

MARY D. PRIOR.

---

[1] "Mind," II. p. 289.
[2] "Mind of the Child," I. Senses and Will, p. 83.
[3] "Mind," III, p. 401.
[4] "Mind," II, pp. 286 and 288.
[5] *Op. cit.*, p. 287.
[6] *Op. cit.*, p. 289.
[7] *Op. cit.*, p. 84.
[8] *Op. cit.*, p. 292.
[9] "Mind of the Child," II. Intellect, c. 18, esp., pp. 128-135.

## THE CLASSICS FOR CHILDREN.

Prominent among educational experiments of recent years has been the introduction of elementary science into the public schools. The results of this innovation have of late become the subject of much criticism, some educators lamenting the imperfect methods by which they have been accomplished; others objecting to the early age at which science teaching has been begun, on the ground that it does violence to a necessary and recognized sequence of mental development. The latter objection, if well founded, is a grave one, and in view of the extent to which science teaching has invaded kindergartens and schools for children under eight and ten years of age, we may well pause and consider whether, for them, science, even of the most elementary sort, is wholly desirable. Does the mind of the normal child at that age crave a reasonable explanation of the facts about him? Does he want to collect and classify? And shall we begin at once to stimulate his critical and analytical faculties, or shall we intentionally let these lie, latent and dormant, permitting the growing intellect to open its eyes in the soft twilight of illusion and story, there to rest until its vision shall be grown stronger, and desire come to press beyond the shades into the daylight of fact?

There is no question that the tendency has been to lead the child away from story and poetry into more exact forms of knowledge. Our children now learn to read from nature primers and science readers. It is considered a far more hopeful sign for them to thirst for knowledge about flowers, bugs and beasts than about fairies, giants and heroes; although I have yet to see the normal child, under ten years of oge, who does not, in his heart, prefer the latter to the former.

Froebel's idea of leading the child to use his senses to learn about the world around him has been distorted into the idea that he should be shown and told many things; and above all, that he should classify, long before the necessity for it has arisen naturally, and even when the facts upon which such classification is to be based, have to be taught to him for the express purpose! In some schools, pictures of animals are presented to the children, and they are asked to classify them; to tell, for instance, whether the animals are vertebrates or invertebrates, the distinction between these terms having been previously explained. In a large majority of cases the answers to such questions must be guesses; for how could a child, or anyone, know, from its external appearance alone, to which of these classes a beetle or a snake belonged? Such teaching does the child a mental injury in that it shows him a method of thought directly opposed to that of a true scientific induction, by allowing him to suppose that his guesses are of any value in the absence of proved fact; and it does him a moral injury when he is applauded for his guess. Botany is presented in the same way, with the advantage that flowers are attainable for

dissection, and consequently the work done is more genuine, but the end is the same,—study of parts and classification.

Why, out of all the varied aspects of science, should these dreary abstractions be selected for presentation to the child? Have classifications arisen, full grown, at the beginning of the history of the sciences? Have they not rather been determined at every step of their formulation, by all the varied and clustered facts of a living world, as these have unfolded themselves to the patient observer? And children can be interested in this living world if we show it to them alive and growing, not pictured, collected and classified. They feel a sympathy with all live things; it is a warm, almost physical response of the life within them to the life around them. There never was a child who could not be interested in watching the growth of seeds which he had planted, or the habits of animals which he had cared for; but the interest is largely a personal and proprietary one, and their structure is a matter of utter indifference to him. He will not willingly consider their bones, nor their tissues, nor any such thing.

There is a deep reason for this repugnance, and it is found in the very constitution of the human mind itself. As has often been pointed out, the child in his development from unconsciousness into knowledge treads the same path humanity has trodden before. The savage explains the child. Primitive man was not scientific in his attitude toward his surroundings. He enjoyed and suffered in what would seem to us a thoroughly irrational manner. He did not look upon nature with the eye of a naturalist. For him the dew fell, and the sun rose and set, as it still does for poets and children; and it would have been a thankless task for the most zealous missionary of scientific cult to seek to disturb these illusions. He framed cosmogonies, not classifications, to explain his half-known world of light and darkness, good and evil. These have come down to us in the early literature of all peoples, and, transmitted into folk-lore and fairy tales, satisfy the children of to-day better than all other stories, because they were conceived by minds in much the same state of development as they themselves are. History gave us a Homer before she gave us a Darwin, and it would be well if we gave more heed to the sequence.

If it be true that the child repeats the experience of the race, we shall expect to find his attitude toward nature very much that of primitive man. The simple experiment of a walk in the woods with children of six or eight years will reveal much of their feelings; and many a teacher of elementary science, conscious of failure in the class-room, has had refuge to this means in order to find out whether nature herself will not come to her aid, and inspire the children with more zeal to learn her secrets. What is the result? Nature, indeed, stirs their enthusiasm, but it comes not in the form of an importunate desire to learn the shapes of the leaves, parts of flowers, or the number of legs on an insect. She inspires them as she did her children of long ago, to hunt nuts or berries to eat, to chase butterflies for mere sport, and to wonder, half fearfully, "if there are bears in these woods."

Experiences of this sort have made many teachers suspect that their failure to sustain children's interest in elementary science is due, not altogether to unskillful presentation of the subject, but to its inherent unsuitability to their minds. The curiosity of the child about the objects with which he comes in contact, which is the avowed justification of science teaching, is a premise which may be wrongly stated and lead to mistaken conclusions. It is true that the child, like the savage, is full of curiosity; but it is not of that

conscious, analytical sort which is the fore-runner of serious investigation, and which would impel him whenever he has discovered one fact to search for its dependent successors. It runs on larger, vaguer lines, having in it more of wonder than of inquiry, and embracing, without perspective, all that he has seen, or heard, or dreamed. The imagination of the child, like that of the savage, strives for a conception that shall synthetize his impressions, a trait of which he often gives evidence in an uncomfortable predilection for theology. For this reason the following song invariably delights little children:

"Good morning, merry sunshine,
How did you wake so soon?
You've scared away the little stars,
And shined away the moon," etc.

"I never go to sleep, dear child,
I just go round to see
My little children in the East,
Who rise and watch for me," etc.

And yet this simple ditty has been objected to on the ground that its science is Ptolemaic! It is so easy to forget that it is upon the errors of the past that the knowledge of the present rests. Would the wise men ever have compared all the facts which finally led them to discover that the earth moves round the sun, if generations of other men had not before noted the more obvious fact that the sun seems to move round the earth? And if we teach the child to distrust the evidence of his senses before he is old enough to perceive the other facts that will afterwards make him doubt it, what will we make of him?

Why, instead of seeking to make him take on mature forms of thought, do we not give him that story and poetry for which his whole soul is athirst, and which can never afterwards come to him so freshly, so satisfyingly? The story of the race in its childhood is pre-eminently a fit nourishment for the mind of the child; not stories, unconnected and with no plan, but story — the story of life as it was lived in an earlier, simpler past of our race; told and read and taught to the child with much illustration and poetry and "local color";—repeated, as he loves to hear it, yet slowly moving on, as he grows older, to understand it, a panorama of ever increasing complexity.

Such a plan might begin at an early age with the nature myths of Greece, and follow on through all her struggles—mythical and historic; for, of all ancient civilizations, that of Greece most nearly approaches the perfection of our dreams. Why do we not let our children live over again this golden age of our race? Why not give them of its life, its heroes, its ideals. Why not give them its glorious chronicles?

That many have wished to give this rich heritage to children at an early age, is evinced by the books that have been made to this end. Two generations of children have rejoiced in Charles Kingsley's "Greek Heroes" and Niebuhr's "Greek Hero Stories." The more recent "Story of the Golden Age," by James Baldwin, covers a wide field of myth not hitherto unified in any way, and for that reason hard to give to children. About Odysseus, as central figure, it weaves all the legends of the time preceding the Trojan wars, including many subjects of Greek tragedy, and making clear many a tangle of Homeric allusion. This book and Kingsley's are full of the true spirit of Greek life and poetry — not modernized as in Hawthorne's "Tales." After their perusal, the child is not only ready, but eager to follow in the Iliad and the Odyssey the fortunes

of the heroes whose acquaintance he has made. There are several arrangements of Homer for children, but there is now less excuse for their use since the appearance of the admirable translation into simple Biblical English of Walter Leaf, Andrew Lang and Ernest Myers. Of late years it has become so much a fashion to impugn the character of Achilles as a hero and the life of his age as heroic, that it is a question whether if the Iliad is to continue to be read with any kindling of spirit, it must not be by children, as yet unacquainted with iconoclastic critics and editors. Undoubtedly a childlikeness of spirit is necessary to the appreciation of many features of the heroic age. It requires an effort for most of us to feel that the attitude of Achilles is a justifiable one; yet a child appreciates the emphasis placed by the poet on the wrath of his hero, he being able to sympathize keenly with the kind of grievance upon which it is based. If the child tires somewhat of the long delayed progress of the Iliad, the Odyssey will be all pure unalloyed delight to him. I have known children of eight years to read both poems many times.

Following Homer come the tragedies, some of which have been arranged for children by Prof. A. J. Church. To lovers of the great originals these may seem bare unto baldness; but the true spirit is in them, and the imagination of the child kindles at these deadly conflicts in the moral world no less than it did at those on the plain of Troy. Children have a keen sense of moral values, and are quick to estimate the character of the heroes they read of. I asked a little girl of eight years, whose face glowed with appreciation of that noblest of the tragedies, "Antigone," if she thought her favorite hero, Odysseus, would have done as Antigone did. After a moment's thought she replied, "I think he would have buried his brother, but he would have put a statue in place of him so that no one would know it!"

From the mythical age to the historic period there is a gap which may be bridged by the lives of Solon and Lycurgus as given in Rosalie Kauffman's "Plutarch." The child becomes interested in the contrasted life of the two cities, Athens and Sparta; and his sympathies at this stage will probably be with the latter, Lacedæmon being already dear to him as the home of Menelaus and Helen, while Athens rises, a new star on the horizon of his knowledge.

Then come the fascinating stories from Herodotus of Media, Lydia, Egypt and Persia, leading up to the latter's supremacy and struggle with Greece. All of these may be illuminated by pictures from Reclus, Ebers, Wilkinson, and Perrot and Chipiez. Indeed, all through such a course, map making, drawing, and modeling may be so correlated with the work that it becomes the beginning of a many-sided appreciation. Some children, from the pictures that are given them, become so observant of architectural styles and ornamental detail that they readily recognize them in other places. Some of the German historical novels, judiciously adapted, are not to be despised in giving color and life to the too meagre outlines of history.

The conflict of Greece with Persia is now reached, and all the latent nobility of the child's soul thrills to the heroic narrative of Marathon and Thermopylæ. He is quick to discern the weakness of Xerxes amid all his gorgeous array, and to appreciate the craft of that second Odysseus, the hero of Salamis. And now, despising the ungenerous spirit and tardy patriotism of the Lacedæmonians, his whole soul is with the Athens that is to rise again from her ashes.

The culminating point of Greek history, the Periclean age, has no

Herodotus for its chronicler. Still the child may be given something from Thucydides, something from Plutarch, more from pictures and descriptions. While he will not understand the full import of the defense of Socrates, and the funeral oration of Pericles, yet, if he has read well the story of Greece up to this point, he can not fail to get a weighty impression from their grave and majestic periods, and to feel that in the passing of Greek civilization there passed "a glory from the earth." More harm may be done by underrating a child's soul than by overrating it, and many of the strongest impressions of children are those which their elders never suspect.

Some persons would hesitate to give Herodotus to a child who would see no impropriety in giving him Dickens' "Child's History of England," or a history of our own country. Indeed, a history of America is the earliest, often the only one, given to children, and yet of all others it is the hardest for a child to really understand. All of the more or less representative governments of modern times will be better understood after a study of the simpler forms of earlier times; and the child who is acquainted with the failure of the ancient democracies of Greece will afterwards become a more intelligent student of the government of his own country.

It has been objected that the study of Greek life and ideals is paganizing to a child. The truth is that the young child is by nature a pagan, and the faith that he so readily gives to Father Zeus and the immortals is not a whit less absurd than the notions he generally has in regard to a single deity. There comes a time when the unholy squabbles on Mt. Olympus and the corruptibility of the Delphic oracle produce their inevitable effect, and he begins to distrust the whole Olympian hierarchy. At this stage, again, literature, the record of the race's intellectual progress, gives to us the means wherewith to answer the child. Certain dialogues of Lucian, in the spirited translation of Rev. W. Lucas Collins, are inexpressibly funny to a child who has read Homer, and exactly meet his own childish skepticism. At a later age Prof. Clodd's wonderful little book, "The Childhood of the World," will give him a more serious answer to his questions.

There are many fields of legend and history later than the Greek which can be gleaned for the child: early Rome with its stern virtue and annals of war; later Rome leading on to European history; and the Niebelungen Lied, almost equal in interest to the Homeric tales, although neither so complete nor connected. In later times are the Chansons de Geste, the Arthurian and Robin Hood legends. These are better adapted to older children, being full of a later, romantic spirit which leads on to Shakespeare and Scott.

There is much in lyric poetry that can be given to children, beginning with an old song of Simonides, and several idyls of Theocritus, and ending with modern English poetry, which he will enjoy in a way he could never have done, nor can any of us do, who have not something of the spirit of Greek poetry.

If it be true that the modern spirit is to hurry us ever away from the old classic repose; if, as seems inevitable, the number is to grow smaller of those who will appreciate classic treasures in their original tongues, let us, at least, be jealous of losing the essence they contain and let us give as much of it as may be to our children, at an age when their souls are crying out for poetry.

JULIA GARDINER GAYLEY.

# LITERATURE.

*Physiologie und Pädagogik. Ein Aufruf an die Anatomen, Physiologen, Psychologen, und Hygieniker.* Von DR. PHIL. J. STIMPFL. Sammlung pädagogischer Vorträge, VI Band, Heft 12, Bielefeld.

In this address, delivered before the 65th convention of German naturalists and physicians, Dr. Stimpfl shows the relations between pedagogy and physiology, anatomy, and hygiene. Two influences have kept the vital connections of pedagogy with these sciences from being recognized: 1st, the old metaphysical psychology; 2d, the late development of those parts of anatomy, physiology, and hygiene which have a bearing on education. The spiritualistic philosophy developed by Leibniz, Herbart, and others, has had a determining influence upon pedagogy. This philosophy made a sharp separation between mind and body, and physiology and related sciences were naturally banished from the field. Ziller wrote: "It is not the work of education to develop the child's body; for where the question is directly in regard to the care and growth of the body, we turn, not to the educator but to the physician. Now the care for the mental life of the child is the essential thing with the educator; and when we speak of physical education, therefore, in our opinion, it is a *contradictio in adjecto*, a conception which is logically wrong." But, as a result of the great revolution in psychology in the last half century, a change of opinion in regard to physical education has slowly appeared. In educational circles there is no longer any doubt that pedagogy is an applied psychology; but if psychology rests on a physiological basis, then pedagogy does also, and physiological psychology has as its result physiological pedagogy.

Education, according to Stimpfl, is the purposed guidance of the development of youth. The teacher, hence, needs knowledge in regard to the development of youth. The normal anatomy, physiology, psychology, and hygiene of the child give him this knowledge. Each one of these subjects, however, has hitherto been relatively little studied. To be sure, since Vesalius the study of the structure of the human adult has been zealously carried on, and since Wolff the attempt has been made to learn the development of the human embryo; but it is not until the last forty years that the attention of anatomists has been directed to development of structure in the human youth. Hence the development of the human organism from birth to maturity is still very little known. Even the anatomist Henke, from whom we have the first complete scientific description of the normal anatomy of the child, says that to-day child anatomy scarcely gives a purely descriptive account of a continuous series of structures in a sequence from birth to the attainment of maturity. It has still to limit itself to a comparison

of the form of the new-born child with that of the adult. Most studied and best known in child anatomy are the skeleton and its appendages, among which Henke reckons, besides the joints and muscles, also the teeth. Other parts could be treated only in a fragmentary way by him. He omitted altogether a description of the child's nervous system and the sense organs. The two last mentioned fields are still left in the dark. If now anatomy will assist pedagogy in establishing principles for the rational guidance of the child's development, then it must accurately describe the great differences which exist between the forms of the new-born body and of the completely mature organs, as well as the transition stages through which the latter rise out of the former.

Child physiology during the last fifty years has been greatly advanced, still the physiologist Vierordt, who wrote the first scientific description of the physiology of the whole period of childhood, says that a physiology of childhood must still leave many disturbing gaps. We are still far from having, for example, complete knowledge of the frequency of the pulse, in the different years of childhood. The metabolic processes in course of the whole period of childhood are not sufficiently known. We are able, therefore, to determine only provisionally the absolute amount of nourishment which is necessary on the average for the different years. Of the effect of use upon the muscles at the different growth stages we know nothing at all. Trustworthy accounts of the character and the scope of the voice in childhood are lacking. And, finally, the description of nerve and sense physiology could be treated only in a fragmentary way by Vierordt. But a thorough knowledge of these two sciences is of fundamental importance for pedagogy.

Child psychology is much less developed than child physiology. In the German language, so far as I know, we have no single complete description in scientific form of the psychology of the child. Of larger preparatory works, Preyer's "*Seele des Kindes*" and Sigismund's "*Kind und Welt*" are alone to be mentioned. Most developed of all of the sciences fundamental to pedagogy is child hygiene. The collection of rich material in this practical science is accounted for by the interest which the medical care of children brings to hygiene. If we recall, however, that hygiene became an experimental science only forty years ago through the influence of Pettenkofer, then we need not be astonished that also in child hygiene many things still need completion and experimental verification. One branch of child hygiene has developed with special rapidity, viz., school hygiene. Although only a few decades old, school hygiene has made such great advance that its justification can no more be doubted. On the other hand, another part of child hygiene, the care of mental health, is still on the whole little developed; and the hygiene of instruction also, exists merely in name.

While pedagogy must be based upon the anatomy, physiology, psychology, and hygiene of thechild, yet this must be done in quite a different sense than that in which medicine is based on these sciences. In the sciences mentioned, the latter studies from the point of view of the cure and prevention of disease; pedagogy, on the other hand, studies these for the sake of guiding the development of the child. This chief difference cannot be too strongly emphasized. The failure to recognize this is a constant source of error to the physician and educator. Physicians as well as educators forget that one can come to the anatomy, physiology, psychology, and hygiene of the child no less from different points of view than to many other sciences; for example, physics and chemistry. Physi-

ology, hygiene, mineralogy and technology make very different uses of physics and chemistry. In like manner the anatomy, physiology, psychology, and hygiene of the child studied with the idea of guiding its development, assume a specific form, just as much as when studied for the purpose of the prevention and cure of disease. If the material of child anatomy is considered and classified according to the point of view of guiding the development of the child, then pedagogical anatomy results. If the division and classification of the material of child physiology is made according to principle of guiding the development of the child, then child physiology takes on the form of a pedagogical physiology. If the choice and arrangement of the material of child psychology are made according to the thought of guiding the development of the child, then we have pedagogical psychology. The sifting and arrangement of the material of child hygiene according to the principle of guiding the development of the child, give to child hygiene the form of a pedagogical hygiene.

The service which anatomists, physiologists, psychologists and hygienists ought to render pedagogy is twofold. First, they should give more attention to child physiology, etc. By working this fallow ground in their sciences, they would render an important service not only to pedagogy, but also to themselves and to pediatrics. Second, they should undertake the preparation of text-books in pedagogical anatomy, pedagogical physiology and pedagogical hygiene. We have a large number of text-books of anatomy for physicians; there are many text-books of anatomy for artists; but there is not yet a single text-book of anatomy for educators. Nor is there yet a text-book in physiology for educators. Such a work should give a description of child physiology dominated by the idea of development. To this would be added the physiology of the adult by way of supplement, and for the sake of comparison. So, too, there should be books in pedagogical psychology and pedagogical hygiene written from the point of view of development.

If the biological sciences come to the aid of pedagogy in the way described, then this subject will incontestibly have the character of an actual science. At present, in spite of two thousand years of talk, pedagogy is still in about the same stage of scientific development as physics at the time of Galileo. At first, pedagogy, like many other sciences, was purely empirical; it stopped with individual observations and reflections drawn from experience. But the heaping up of observations can never make an actual science. At the beginning of this century pedagogy became speculative. The same reproach can now be cast upon pedagogy as formerly upon philosophy. Verified and unverified hypotheses are not sharply separated, and there is not sufficient care to keep one's opinions and wishes out of a subject. Yet it cannot be denied that the conviction is gradually making its way in educational circles that pedagogy also, like anatomy, physiology, etc., must be a science based upon experience. It must distinguish sharply between certainty and probability; it must use hypotheses merely as means to an end; it must fulfill the demands of verification.

Dr. Stimpfl fails to mention several important special contributions (not German) to the science of development for which he rightly pleads, notably Miss Shinn's "Notes on the Development of a Child," Garbini's "Evoluzione della voce nella infanzia," Clouston's "Neuroses of Development," and Donaldson's "Growth of the Brain," the last of which has appeared since he wrote.

W. H. B.

*Graded Schools in the United States of America.* By MARY H. PAGE, pp. X, 71.

*The Training of Teachers in the United States of America.* By AMY BLANCHE BRAMWELL, B. Sc., and H. MILLICENT HUGHES, pp. XII, 198. London, Swan, Sonnenschein & Co. New York, Macmillan & Co., 1894.

These two books contain the reports of a committee of five experienced English teachers sent to the United States in the summer of 1893 by the Gilchrist Trustees, "for the purpose of studying and reporting upon secondary schools for girls and training colleges for women in different parts of the states." The committee spent two months visiting and studying such institutions in New England and the western states. In case of the graded schools, the first aim was to visit the "most typical;" to this end the school superintendent was consulted. The teaching is found to be "live teaching." "Work is done in all branches with almost savage industry and ferocious energy." Co-education makes the American school girl more self-reliant than the English, and exercises a wholesome restraint on the manners of the boys. In general much freedom of behavior is accompanied by admirable order and discipline. Nearly all features of the graded schools are commended, and the weaker points scarcely given the prominence necessary to present a true picture. The report on the training of teachers is more critical. It describes and very fairly estimates the value of the work done in (1) state normal schools, (2) city normal and training schools, and (3) departments of pedagogy in universities and colleges, summing up about as follows: The state normal schools, adhering to old traditions and failing to insist on adequate scholarship for admission, are obliged to devote themselves either to the raising of the scholarship of their pupils or to so-called training, under conditions the most conducive to mechanical lines of work and dead forms of method. The city training schools, supported by and supplying teachers to the locality where they exist, are in danger of being cramped in their method by seeking to win public favor. The university departments of pedagogy are capable of affording the best opportunities for thorough training of primary and secondary teachers. They are in the most favorable position to unify and stimulate education generally. Where training is bad, old methods have been retained under new conditions; where results are good, they are due to a readiness to try new methods and to keep in touch with the educational progress of the day. This report is a careful, clearly written and judiciously critical study from competent observation of the work actually being done in training teachers in this country. F. E. SPAULDING.

*Amerikanisches Bildungswesen.* Von DR. E. HANSKNICHT. Berlin, 1894, pp. 29.

The culture system of America, treated in twenty-four pages, does not commend itself *prima facie* on account of the vastness of the title and brevity of its treatment. Of all the many recent treatises on education in this country, this seems to us the cheapest and most superficial. The authors who introduced Herbartian pedagogy into Japan went home across this country in 1890, and visited the exhibition at Chicago in 1893. He says there is a rage for education here because our system is full of gaps; that base ball is a favorite play; that university estension is an extension (*Ausdehnung*) on the part of the universities, etc. About one-

fourth of the pamphlet is devoted to a digest of about a dozen university extension lectures. Our greatest achievement is said to be the education of women. Between four and five pages are given to reprinting entrance examination papers at Bryn-Mawr. "Full of gaps," indeed, must our system seem to all who depend for a knowledge of it upon such a report.

*Les Universités des États-Unis et du Canada.* Et spécialement leurs Institutions Médicales. Par DR. O. LAURENT. Paris, 1894, pp. 311.

Dr. Laurent is a professor at Bruxelles and a voluminous medical author. The author is "not entirely" of the mind of M. Coubertin, who wrote, "Harvard seems to me a chaos, a confused and somewhat awkward imitation of English universities; it is not truly American in either its atmosphere or its tendencies; vital forces are lost in this confused mass where no current is formed," etc. The present author does not inform us, however, wherein he differs from this opinion. He devotes but a few pages to universities and then hastens to medical schools, where his characterizations are less superficial. He finds much that is both new and good, in fact a "great mass of originality," although up to now it has been mostly "veritable Americanism or puffism." Everywhere he marks the prodigious power which individual initiative has played in both founding and organization.

*Plans for the Government and Liberal Instruction of Boys in Large Numbers.* London, 1394, pp. 461.

This famous book, now reprinted after long oblivion, was first published in 1822 anonymously, as if it were an ideal and desiderated but nowhere existing scheme. Three years later, in a new and enlarged edition, the authors, Messrs. Hill, and their institution, the Hazlewood school, were discovered. The pupils enacted and enforced their own laws; each dormitory had its prefect, and *silentiaries* presided over each meal. Personal marks for high orders of effort could purchase holidays, while lower marks were transferable. Most movements were to music and often with military step. Classes are for students near equality, and so boys rank differently in different topics. The school printing shop helps boys deficient in orthography, while classics were not neglected. Unusual encouragement was given to science and modern studies generally, and physical culture, gymnastics with apparatus and a swimming tank were provided. A school library and museum were developed to commendable proportions. Self-help was strongly appealed to, and a broad and very modern distinction was made between studies instrumental to others, like writing, parsing and those valuable as ends *per se*. Descriptions of the dramatic exercises, extracts from the debates, laws, trials, reports on cases, all by the boys, are very interesting. Every teacher will find the book interesting and profitable.

*The Care of Children.* By ELIZABETH R. SCOVIL. Philadelphia, 1895, pp. 378.

This manual by the superintendent of the Newport Hospital is the best guide we know for the diet, hygiene and regimen of children from birth to adolescence. It is practical throughout, detailed, and, while concerned chiefly with physical needs, does not ignore mental and moral ones. The book closes with chapters on a desirable outfit for girls and boys on leaving home for a boarding school.

*The State and Its Children.* By G. M. TUCKWELL. London, 1894, pp. 184.

This is a compendious discussion of reformatories, truant, industrial, voluntary and workhouse schools, hospitals, asylums, canal and van children (70,000 in number in England), homes for blind, deaf and dumb, circus and theatre children, half and full timers and the work of the Society for the Prevention of Cruelty to Children. The question of the children is central among all social questions, and its wise treatment will affect the solution of all other social problems. Of all the various ways in which democracy can make itself heard, children can use none. They comment, organize, vote, agitate, hold meetings or processions. What an appeal theirs would be if organized. The endless labor, the marriage of waifs and criminals, youth without school or play, brutality, starvation, disease,—these are the tragedy of unprotected and uncomplaining childhood.

*Pëdagogische Psychologie für Schule und Haus.* Von DR. GOTTFRIED MAIER. Gotha, 1894, pp. 316.

This work is said to be "based on experience and recent investigations," and contains ten pages on mental diseases and five on biblical psychology. Upon this, the new features are chiefly based, and the author, a school director, proceeds to treat knowledge, feeling and will in the familiar Herbartian way, occasionally injecting a section or paragraph on biological laws, somatic and religious feelings, play and work, which have an appetizing effect. But the biological laws are found to be the familiar culture stages and the precepts to go from the concrete to the abstract; from the indefinite to the definite; from elements to composition, and otherwise the *Dammerung* of the new is very, very faint.

*Gründlinien der Gynnasial Pädagogik auf Grundlage der Psychologie.* Von DR. JOH. NUSSER. Wurzburg, 1894, pp. 341.

The Herbartian catch-phrases, which are incessantly repeated as finalities, and the thin paper is not attractive, but the book is better than these indicate, especially in the nearly 200 pages of it devoted to each of the chief topics of the gymnasial curriculum.

*Encyclopädisches Handbuch der Pädagogik herausgegeben von* W. REIN. Langensalza, 1894.

This comprehensive encyclopedia, for which nearly 150 collaborators are already secured, promises to be a handbook between the dozen volumes of Schmidt and the convenient volume of Lindner. The subjects are freshly treated, and the literature at the end of the chief articles is particularly good. Historical topics are given a minor place. The work originated in the idea of a monographic treatment of *Disciplin* or *Zucht*. The idea broadened to include medical, ethical and psychological relations. Thus the work is chiefly modern and treats exclusively of German topics. The sociological periphery is not neglected.

*Einrichtungs und Lehrpläne für Fünf u. viceklassige Volkschulen.* Von OTTO BISMARCK. Halle, 1894, pp. 178.

The author, a school rector and inspector, gives his plan after four years of trial in Eilenburg. Each topic of instruction is taken up and described in detail as to matter, method and illustration and

text-book material. If any illustration were needed of how diametrically opposed the German method is to the mistaken precept of our committee of ten, that subjects should be begun in lik emanner and matter for those who are going through an academic course and those who stop at the end of required attendance, this valuable little book would furnish it. Not one topic is treated here as it would for those who were going further.

*Illustrated Manual of Hand and Eye Training on Educational Principles.* By DR. W. GOETZE. London, 1894, pp. 229.

The feature in this book, with its sixty-nine illustrations, which is newest, is the simple mode of transforming a school bench and desk into a work table and the articles made. Among these are tin cups, half-litre measures, funnels, spoon-holders, lattice work, clasp rings, meat-hooks, mounted magnetic needle, centrifugal ring, a Segner water-wheel, pastry-stamps, button-hook, bill-file, geometrical forms, toilet boxes, book-stands, key-holders, picture-frame, saw-horse, gate, ladder, milking stool, and a score of other forms of country wood work. The card and brick moulding work have some new features.

*A System of Physical Culture.* By CARL BETZ. Book 4, Popular Gymnastics, pp. 86.

Polka step and other fancy steps, arm movements, marching and wheeling tactics, pentathlon for girls, including ring-toss, grip-test, racing and jumping, wrestling of several kinds, throwing pole as a spear, putting stones, shot or quoits, pitchetts, foot-ball, grace-hoop, bean-bags, shuttle-cock and ball and basket, various kinds of climbing-sticks, push and tug-of-war, rooster fight (bumping with arms folded and hopping on one leg), jumping of many kinds, balancing,—these and many more grouped by school grade and for boys and girls make up this little book.

*200 Jeux d'Enfants en I lain Air et à la Maison.* Paris.

As the name indicates, this is a catalogue of games for children. The plays are arranged in a way convenient for reference as regards age, temperament, number of players, means for playing, and the season in which they are played. There is no attempt to analyze any of the plays with reference to their hygienic or pedagogical value; it is simply a catalogue in which the plays are described sufficiently to direct the child in playing the games.

T. L. BOLTON.

*Boyhood, Adolescence and Youth.* By L. TOLSTOI. London, pp. 980.

This interesting memoir depicts among many interesting things the mental phenomena of adolescence. For a year or more in the early teens, Tolstoi led a solitary life musing on abstract questions concerning the destiny of man, the immortality of the soul. He was by turns epicurean, ascetic, fatalist, libertarian, believer in pre-existence, etc. The thing that brought him to the verge of madness was the fancy that no one but himself really existed—that objects were only images. He would even glance in the opposite direction suddenly, expecting to find nothingness. All this, he says, left him only a wavering mind, with weakened will and a habit of analysis which destroyed freshness of feeling and clearness of reason.

*Ballads of Bairnhood.* Selected and edited by ROBERT FORD, a gardener. London, 1894, pp. 348.

This is a collection of choice litanies of childhood by Scotch authors. The Scotch dialect, which appears more or less in most of them, lends a peculiar charm to every form of *laus infantium.* Toddlekins, or the wee wee bairn, is here more often *besung* than older children.

*Simple Experiments for Science Teaching.* By JOHN A. BOWER. London, 1894, pp. 169.

This little primer of inexpensive experiments in physics and chemistry follows Faraday's precept that "there is no better and no more open door by which you can enter into the study of natural physical philosophy than by considering the phenomena of a candle. There is not a law under which any part of this universe is governed which does not come into play and is touched upon by these phenomena."

*Ethics of Citizenship.* By JOHN MACCUNN. Glasgow, 1894, pp. 223.

Men are not equal, but the lowest have a spiritual worth which makes them above chattels. Individualization is increasing, but finds its limit in sympathy and respect for the moral life in each. Some so-called rights are merely strong inclinations, others can be proven such. Majorities, as a court of appeal, have a reasonable presumption in their favor, and party is a justifiable means. The basis of consistency is sound common sense. On the whole, democracy strengthens belief in the worth and possibilities of men, and should find an ally in religion. Its most serious problem is luxury.

*Das Dogma vom klassischen Allerthum.* Von D. P. NERRLICH. 1894, pp. 400.

This is a history of the development of the doctrine of a classical antiquity to show that it is a great but historically necessary error. Philosophy should have no place in the school, but only in the university, and other languages are as indispensable as Greek and Latin. The contents of these languages, moreover, do not justify their dominion. Christianity has never been entirely reconciled with classics. The large pages and fine print of this heavy volume and its ponderous style make it hard reading, but it is an able piece of pedagogical polemics.

*A Practical Manual of Mental Medicine.* By E. RÉGES. Tr. by H. M. Bannister. Utica, N. Y., 1894, pp. 692.

This work, crowned by the Faculty of Medicine of Paris, praised and used there by Professor Ball, is the first modern standard French work on mental diseases and their treatment to be translated into English. The two chapters on the commitment of the insane and their relations to the civil code — exclusively French in their contents—are omitted. As a whole this treatise is like a manual in its brevity and clearness, while it is at the same time permeated by the author's philosophical and other personal and original views. Its spirit is clinical, and it can be heartily commended to students of medicine and pedagogy. It is both printed and bound by the inmates of the Utica Asylum for the Insane.

*Primer of Psychology.* LADD. New York, Scribner, 1894.

This is a refreshing little book from the standpoint of descriptive

(or empirical) psychology. The style of treatment is indicated by the answer to the question: What is psychology? "Suppose, for instance, that while walking on the street the attention is attracted to some person approaching, etc." Then follows a brief indication of the mental processes that result. The illustrations are taken from the every-day experience of everyone. Let us be truly thankful that we have at last an elementary text-book of psychology without the odor of the dissecting room. There is nothing so irritating as the prevalent opinion that psychology is a sub-department of nerve-physiology. Descriptive psychology, the science of mind, is totally independent of the existence of a brain; and experimental psychology is simply a department of descriptive psychology. The crowning glory of a text-book is accuracy and brevity. Prof. Ladd is always accurate, and in this book he is deliciously brief and crisp. In fact, although the book is not intended for grown-ups, it is just the kind of thing to read after dinner with the coffee. There is one thing that we miss, namely, the interspersion of elementary experiments. But this could not have been done without great increase in bulk, and the matter was very wisely left to special works. On the whole, to write a good elementary text-book is a very difficult and dangerous matter. Prof. Ladd has not only done this, but has done it so well as to surpass himself and everyone else.

E. W. SCRIPTURE.

*A History of the Congregational Churches in the United States.* By W. WALKER. New York, 1894, pp. 451.

This is one of a series of denominational histories published under the auspices of a committee of the American Society for Church History. The series contains twelve volumes descriptive of twenty-one denominations, and is an important addition to our educational literature. Congregationalism has a history of 350 years, and more than 250 years in this country. It has been a potent influence in moulding New England. Professor Walker has told its story well.

*Nicholai Lobachêvsky.* An address by PROF. A. VASILIER. Tr. by George Bruce Halstead. Texas, 1894.

This admirable address is commemorative of a man who was to Euclid what Vesalius was to Galen, what Copernicus was to Ptolemy. The great discoverer of n-dimensional space led a quiet academic life in the remote Russian university of Kasan an *ultima musarum Thule.* He had the highest recompense of a thinker, the further development of his ideas. The physiology of the senses, the theory of knowledge, and the non-Euclidean geometry concur in suggesting that as the latter becomes more a physical science, it may be the true system of nature.

---

In 1893 Mrs. Louch of the Cheltenham Ladies' College, Miss Hughes of Cambridge and Miss Clapperton of Edinburgh attended the child study section of the N. E. A. at Chicago. The two latter ladies afterwards visited Worcester, and in the summer of 1894 Mrs. Louch returned to attend the summer school at Clark University. She returned at once to the summer meeting of Scotch teachers at Edinburgh, and there, with Miss Clapperton, held a public meeting describing the work they had seen in this country. This aroused so much interest that it led to the formation of the British Associa-

tion for Child Study, which now has three branches: one at Edinburgh, at the head of which is Dr. Charles Douglas, lecturer on philosophy in the university; one at Cheltenham, with Miss Beal, principal of the ladies' college, as president; and one in London, with Professor Sully president. Monthly or semi-monthly meetings are held at all three branches, the nucleus of a library is formed and members of the committee hold meetings at other places. Mrs. Louch has written two valuable articles during the present year in the *English Journal of Education*, entitled "A Laboratory of Child Study." Professor Patrick Geddes and Frances Warner have expressed much interest and corresponded concerning practical details of the work. In all there are now between 100 and 200 paid-up members, and there are signs of growing appreciation of the scope of the work, and work is already begun. As we go to press, a valuable address by Mrs. Louch on the subject at the Oxford summer meeting comes to hand.